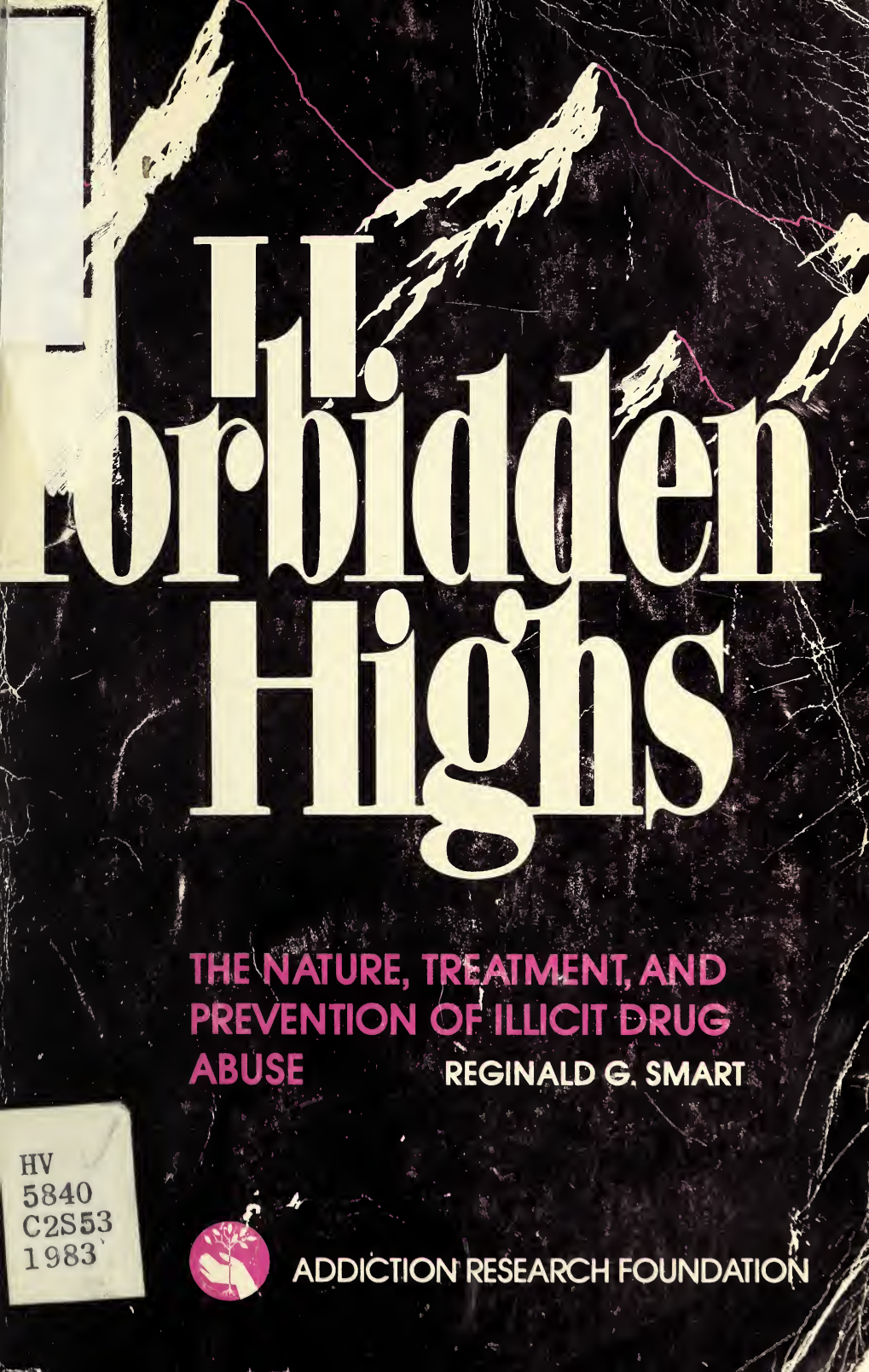


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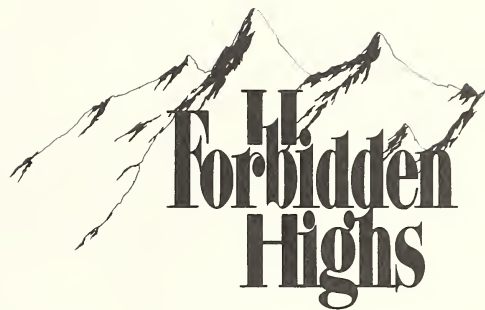
THE NATURE, TREATMENT, AND
PREVENTION OF ILLICIT DRUG
ABUSE

REGINALD G. SMART

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1983



ADDICTION RESEARCH FOUNDATION





II Forbidden Highs

THE NATURE, TREATMENT, AND
PREVENTION OF ILLICIT DRUG ABUSE

Reginald G. Smart



ADDICTION RESEARCH FOUNDATION

Toronto

The views expressed and positions taken in this book are those of the author and do not necessarily represent the views or positions of the Addiction Research Foundation.

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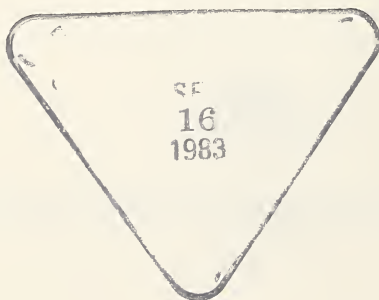
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Preface

The abuse of illicit drugs has been an important social and medico-legal problem in Canada for several generations. Usually Canadians take comfort in the view that there is less drug use in Canada than in the United States. Although this might be true for heroin addiction in large cities, it has not been well established for other types of drugs. In fact, comparisons between countries for different types of drug use are almost impossible to find. For the United States, Great Britain, and several Scandinavian countries, there are recent books which summarize most of what is known about drug use in those countries. However, there seems to be no similar book for Canada, despite the large amount of Canadian research on drug use. The Le Dain Commission reports of a decade ago described drug use well for their time. Since their appearance, much research on drug abuse has been done. Extensive experience with education and treatment has been gained. There are a few journalistic studies of drugs in Canada, but those are also 10 years out of date and are highly specialized. I have here attempted to fill gaps in our understanding about current drug use in Canada with a single source, which I hope will be of interest to a variety of readers both professional and non-professional.

The areas covered in the book are those of most interest to people seeking information on drugs. The major needs seem to be for information on cannabis, hallucinogenic drugs, heroin, and cocaine. People need information on the extent of use, especially by young people, and about treatment for drug users, the laws about drug use, and what to do about drug abuse in their family or their community. This book attempts to summarize what information and research are available on these topics in a non-technical manner. Consideration of legal drugs such as alcohol, tranquillizers, and tobacco is not undertaken here, since so little of their use is illicit.

This book has a clear emphasis on studies and experience from Canada. It is hoped that the book will be useful to anyone concerned with drug problems, but especially to concerned citizens, professionals new to the field, students who want to learn more about drugs, and perhaps even drug researchers who want to know more about an area which is new to them.

I want to thank everyone who helped by giving advice or preparing materials for this book, but especially the following:

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Lastly, my wife, Lillian, helped with too many aspects of the project to note here, but all of it is greatly appreciated.

SECTION I

Historical Background

A Historical Perspective on Drug Use in Canada

Although traditionally Canadians have not been heavy users of psychotropic drugs, the situation has changed in the past two decades. Although Canada has never had a substantial problem with heroin, Canadians are now among the world's largest consumers of drugs containing codeine. Canadian young people have one of the highest rates of cannabis use anywhere. Illicit drugs such as cannabis, LSD, stimulants, and depressants seem to be available in almost all high schools, and the rarer drugs such as cocaine, heroin, and LSD in many. Glue and solvent abuse by the very young is a widespread phenomenon in many areas, especially in certain native Indian communities. Tranquillizer use among adults is also at a high level compared to many countries.

Usually, Canadians have sought to control drug use by legal means. There has been historically and there still is a strict law-and-order approach, with heavy penalties for most kinds of drug-related activities. Non-coercive responses such as educational efforts at prevention and the development of treatment facilities have been very recent. This book attempts to outline the nature and extent of illicit drug use in Canada and describe the various legal, educational, and treatment approaches taken to contain and prevent it.

Few social phenomena have changed so radically or so often as drug use. We think of drug taking as involving recreational "turning on" by young people, the "mainlining" of heroin addicts, or the solvent sniffing of pre-teens. However, these types of use are relatively recent, only remotely similar to those of two generations ago and totally different from those of a century ago. Before 1960, most drug use was by adults, not young people. Some historical perspective is necessary to see how drug use has changed over the years. It enables us to see how various legislative and treatment responses have been developed—or ignored—and sheds light on how social and cultural factors influence drug taking. Understanding why some drugs were popular at a given time and the reactions to their misuse depends upon seeing broad social and cultural

events in context, as does knowing something of fads, fashion, and the availability of drugs.

There are several well-marked phases in Canadian drug use, each with its own particular problems and methods of control. The first can be called the "pioneer era," from the time of the European immigration to about the time of Confederation. There followed a period of widespread use of patent and proprietary medicines up to about 1908 and the first controlling legislation. Opium smoking, which overlapped these two periods, was largely controlled by 1930 but was followed by the growth of heroin addiction. The last period, after about 1965, has been the evolution of medical and scientific interest in addiction and at the same time has been marked by widespread use of recreational and mind-altering drugs and their great popularity among young people.

THE PIONEER ERA AND DRUG USE

When Europeans came to the New World, in some parts they found inhabitants who were well acquainted with drugs. Spanish conquerors found that the Aztecs of Mexico had been using alcohol, hallucinogenic mushrooms, and cacti for generations and that coca leaves were chewed and even venerated in Peruvian society. However, in Canadian latitudes the situation was quite different. Before contact with Europeans, the Innu and Indians of Canada used no psychotropic drugs of plant origin other than tobacco. It seems clear that they were not even aware of alcoholic beverages; unlike the Indians of South and Central America, they had not discovered fermentation (Heath, 1982). Some North American tribes used herbal teas and maple "wine," but they contained no psychotropic substance. Although some tribes smoked pipes, the "tobacco" was often dried leaves of trees with little nicotine content. Drug-bearing plants such as jimson weed (*datura*). *Amanita muscaria* and *Psilocybe mexicana* mushrooms were probably growing wild in some areas of Canada (Guzmán *et al.*, 1976), but they were not used for their psychotropic qualities.

Apart from alcohol, the first psychotropic drugs used in Canada were almost certainly patent medicines brought by English traders and immigrants in the late 1700s (Guest, 1966a). Probably English patent medicines first arrived with United Empire Loyalists who came to Canada after the American Revolution. Guest (1966b) has identified what he believes is the first advertisement for patent medicines in Canada, which was presented by a Dr. Nathan Smith from his shop in Saint John, New Brunswick, on July 9, 1795.

"Just Imported in the Brigantine Polly, Cpt. Boyd from London, a General Assortment of Medicines To Be Sold by the Subscriber."

Among these medicines were “Daffy’s Elixir,” “Bateman’s Drops,” and “Turlington’s Balsam.” Daffy’s Elixir contained opium, but the other two were essentially nostrums with no dangerous drugs and doubtful benefits of any kind.

Not much is known about the content of the medicines sold during the 1800s. Since there was no requirement that labels state the contents, few manufacturers bothered. While actual analyses of the contents are often not known, it is likely that most of those in liquid form contained alcohol (up to 70% alcohol) and that many of the painkillers contained morphia or laudanum (both opiates) or cocaine.

The most common medicines seemed to be for cough suppression, the general treatment of pain, indigestion, dyspepsia, or colic. There were many asthma cures, cholera specifics, and treatments for venereal diseases (always advertised as men’s diseases) as well as medicines for “general weakness” (usually advertised as women’s disease), fatigue, and nerve disorders. Since few of the diseases being treated were understood by either medical experts or the purveyors of the patent medicines, they usually contained either nothing of value, pain suppressants such as alcohol, paregoric (an opiate), or morphia, or stimulants such as strychnine or coca. Their value was almost entirely dependent upon their ability to affect the central nervous system or to fool the patient into feeling better.

THE PHARMACEUTICAL SUPERMARKET: CONFEDERATION TO 1908

The period just after Confederation in 1867 to the passage of the first Proprietary and Patent Medicines Act in 1908 marked an enormous increase in the numbers of patent and proprietary medicines sold. Some indication of the increase can be seen from census figures for patent medicines and factories. In 1870, the value of medicines produced in Canada was \$171,050; by 1880 it was \$666,580, and by 1890 some \$789,000. Also, the number of patent medicine factories increased from 28 in 1880 to 116 in 1890. Almost all of these factories were located in Ontario and Quebec with a few in the Maritimes.

In the late 1800s, much patent medicine was also imported. About 80% of imported proprietary medicines came from the United States, and a little from Great Britain, France, and Germany. Imports of proprietary medicines amounted to \$331,195 in 1899 and \$517,671 in 1906. Also, legal imports of opium increased very greatly during the same years. Though it is not certain how much of this opium was made into drugs such as morphia and laudanum for patent medicines, the amount was probably very substantial.

As well as opiates, coca and cocaine were extremely popular and thought to be beneficial. Coca and coca infusions had been prescribed for their stimulating properties since the early 1800s (Phillips and Wynne, 1980). Cocaine in purified powder form was first derived from coca leaves in the early 1860s. It was rapidly made popular by doctors and others who thought it a harmless stimulant and a useful cure for morphine addiction. Both Sigmund Freud and his colleague Fleischl became heavy cocaine users; Freud recovered, but Fleischl eventually died a cocaine addict. Sir Arthur Conan Doyle made Sherlock Holmes a cocaine addict and in so doing promoted the stimulating properties of the drug.

Many beverages and medicines sold in the late 1800s contained cocaine or coca extracts. When Coca-Cola was devised in 1886, it contained cocaine, caffeine, and extracts of kola nuts. The cocaine was not removed until 1903 (Phillips and Wynne, 1980). The first advertisements for Coca-Cola touted it as an "intellectual beverage" and a "temperance drink," presumably because it contained no alcohol. It was stated to be good for "sick-headache, neuralgia, hysteria, and melancholia."

Numerous other beverages contained cocaine, including Kos-Kola, Kola-Ade, Celery-Cola, Wiseola, and Care-Cola. The famous Vin Mariani, which was a combination of French wine and cocaine, was very popular among actors, singers, and other celebrities such as Sarah Bernhardt, John Phillip Sousa, Ulysses S. Grant, President McKinley, and Pope Leo XIII. Coca and cocaine were also accessible through cigarettes, beverages, cough syrups, cordials, and headache pills. Sold as "pick-me-ups," painkillers, and general tonics, many were available in Canada.

It is difficult to determine just how many people were using dependency-producing drugs such as cocaine, morphine, and laudanum in Canada before the first drug controls. There were no surveys of any kind done to find out how many users there were.¹ Of course, data on legal convictions were not available; nor were death records or data on admissions to treatment.

There was no interest taken in treating drug abusers and hence little knowledge about the characteristics of the abusers. Canadian

¹ Only one survey has been found on the subject of drug problems and users. Eberle and Gordon (1903) sent a circular letter to all 1,500 members of the American Pharmaceutical Association in 1902. About 10% were mailed back, some from Canada. However, information about drug problems in Canada is not included in the results reported.

medical journals of the day give almost no attention to the problem except to point out that many drugs were “useless quackery.” Doctors also pointed out that the drugs could not, as claimed, cure diseases such as VD, tuberculosis, or rheumatism. They could, however, make sufferers forget their problems or give them a new problem—addiction—to take their minds off the old.

Some indication of the popularity of drugs can be gained from looking at advertisements and catalogues from the period; the mail-order catalogues of the T. Eaton Co. are a good example.² Prior to 1893 there seem to have been no patent medicines available from the catalogue. However, in 1893 nearly 200 were for sale. These included paregoric (10¢ a bottle), Maltine Coca Wine (95¢), South American Nerve Cure (75¢), and Coca Wine (75¢). Coca products virtually always included some reference in their name to coca, to Peru, or to South America, and they were typically among the most expensive preparations available. Such products as Pond’s Extract (40¢ and 75¢) containing 63% alcohol and Radway’s Ready Relief (20¢) with 27% alcohol were also sold, all quite legally. The numbers of patent and proprietary medicines expanded greatly in the catalogue offerings up to about 1911, when they decreased and the various coca “wines” disappeared.

The Sears-Roebuck Catalogue of 1906 also contained advertisements for several hundred patent medicines. They were available in Canada and indeed were sent all over the world. Sears-Roebuck offered paregoric at 14¢—“always useful for children and adults”—and pure alcohol at 75¢ per quart. Their Peruvian Wine of Coca, which included both coca and port wine, was useful for “aiding digestion, strengthening both the body and the brain” and in treating anemia, asthma, malarial complaints, and “weaknesses caused by excesses” (a veiled reference to venereal disease). Peruvian Wine of Coca was obviously marketed as a remedy for males. For females, Vin Vitae was offered, also with coca, and at the same price. It was for “weak women, easily tired, worn out by ordinary household duties” and “for those women sufferers from the diseases and troubles peculiar to their sex.” There is no reference to its use for venereal disease: hard-working housewives would never be so self-indulgent as to get into such a state.

Another strange phenomenon was the sale of cures for various sorts of addiction, with the cures usually containing other drugs. For example, the Seroeco Specific for the Tobacco Habit contained strychnine, a stimulant. An amazing product called The White Star

² Readers can see copies of these from 1893 to the present, with few deletions, in the Metropolitan Toronto Library.

Liquor Cure contained coca and carried the assurance to buyers that "it can be administered secretly without the knowledge of the drinker" in tea, coffee, or presumably alcohol. It was claimed that it "will do no harm in any case" and "will always improve the condition of the drinker to a marked degree."

Many patent and proprietary medicines were advertised in Canada through special brochures and almanacs given away at stores, fairs, agricultural displays, and even door to door by salesmen. Most farmers' almanacs contained advertisements for proprietary medicines and some information about weather and phases of the moon. Almanacs for city people often had historical material and a little something on physiology plus the advertisements for medicines.

THE DEVELOPMENT OF THE FIRST LEGAL CONTROLS ON MEDICINES

During the early 1900s opposition to the free sale of patent and proprietary medicines grew, albeit slowly. Much of the concern was that they contained enough alcohol to be classed as alcoholic beverages and should therefore be taxed as such. Their alcohol content also irritated temperance forces. The major issue for the medical profession seems to be that they promised cures for diseases which had no treatment. The vast sales of narcotic and coca drugs seems to have aroused attention very slowly. In 1903 an editorial in the *Canadian Journal of Medicine and Surgery* reported concern about the retail sale of drugs containing narcotics and discussion of a proposed Toronto law limiting such sales. In 1904 an amendment to the Post Office Act was prepared to prevent the mailing of newspapers, books, and magazines containing promises of marvelous cures, but it was never enacted (Guest, 1966a). Several discussions in Parliament were held on the issue during the years 1904 to 1906; however, little was done because of the need to protect business interests.

There was virtually no regulation in Canada of advertising, sale, or distribution of any of the patent or proprietary medicines prior to 1908. One reason was that many preparations had secret formulas, and government laboratories could not detect all of the ingredients with the limited techniques for analytical testing available at the time. However, some government analyses were done (MacFarlane, 1906) which showed that many cough syrups, stomach bitters, and general cure-alls contained only alcohol and virtually no other drug. Headache powders were found to contain large doses of acetanilide (a cardiac depressant) and phenacetin (a minor painkiller). However, a search was apparently not undertaken for the more dangerous drugs such as opiates and cocaine.

The Proprietary and Patent Medicines Act was passed in 1908.³ It was supported more because the alcohol in so many preparations offended temperance sentiments than because narcotic or stimulant drugs were thought to be dangerous. The act restricted the use of some 31 drugs and prohibited the use of all forms of cocaine and its salts. Preparations could not contain enough alcohol to be listed as a beverage but only enough to provide a medium for other substances. That morphine and opium were at first both left out of the act signified their minor importance to legislators. However, they were later added by ministerial order. Special efforts were made by the manufacturers to have specific drugs such as Nathan Tucker's Asthma Specific (seven grains of cocaine per ounce) exempted under the act, but eventually all drugs containing cocaine were banned.

The original 1908 act was deficient in many respects. It required only that the scheduled drugs be listed on the label for products for internal use. It did not require listing of other contents. Nor were manufacturers required to register the contents of proprietary drugs with the government until an amendment of 1919. Also, wild endorsements and claims of magic cures were prohibited only in 1919: cures were often claimed for diabetes, tuberculosis, opium addiction, and alcoholism. In 1919 the manufacture of patent or proprietary medicines containing opium or its derivatives was prohibited. The list of scheduled drugs was gradually expanded to include most dangerous drugs and by the 1950s virtually all of those with major addictive potential (except for codeine). Control mechanisms were strengthened by amendments in 1934 and the development of the Food and Drugs Act, 1953. Patent and proprietary medicines are most unlikely now to contain any large amount of alcohol or any addictive drug except codeine in small amounts.

THE CRUSADE AGAINST OPIUM: 1860-1930

At about the same time as the middle classes were discovering drugs through patent medicines, another group—the Chinese in Canada—were continuing their traditional use of opium. The first Chinese had come in the 1850s to work in the British Columbia gold mines. Much larger numbers came to build the railroads or cut down the forests later in the century. The majority who first came were young to middle-aged male laborers without the support of wives or families. Whenever large groups of males live in isolation from females, there is usually extensive drug or alcohol use or both. Since they had no tradition

³ Legislation controlling narcotics in patent medicines in the United States was passed in 1906.

of alcohol use, the preferred drug among Chinese laborers was the opium which had been used for generations in China. The usual method of taking was smoking raw opium in pipes. A large number of opium dens were established in British Columbia to serve the Chinese. A major concern, even anger, about the Chinese and opium use was that white people, especially white women, would be enticed into the practice and corrupted.

There is no evidence that opium use was very extensive among Chinese immigrants as a whole, although many "cases" were described. As opium use was quite legal before 1908, there were a number of opium factories in British Columbia. Certainly, large amounts of opium were imported into Canada around 1900. The figures available show that 56,360 lb were imported in 1900 and 81,302 lb in 1901. Most of this was smoked rather than made into morphine, and the greatest part of it was probably smoked in British Columbia. When it is considered that the population of the province in 1901 was only 178,657 persons, the amount does seem very great. Apparently opium was used by Chinese but not other Asiatics such as Japanese or East Indians.

It was by no means established that opium smoking was a dangerous habit. No evidence was brought forward that opium use greatly affected the health or social functioning of the Chinese laborers or the few white users either. In fact, many argued that it was safer than alcohol and that opium smokers were altogether a better class of people than drinkers. Many of these feelings were expressed by white settlers in British Columbia and by opium users themselves. An example is drawn from the 1884 Royal Commission on Chinese Immigration. Two of the Commissioners on a nighttime ramble through Vancouver's Chinatown encountered Emily Wharton, aged 22 and an opium smoker. After some persuasion she agreed to answer a few questions (quoted from Morton, 1974):

"Why did you commence to smoke opium?" she was asked.

"Why do people commence to drink?" she answered. "Trouble, I suppose, led me to smoke. I think it is better than drink. People that smoke opium do not kick up rows; they injure no one but themselves, and I do not think they injure themselves very much. I know opium smokers who are 65 and 70 years of age. There is man over there who has smoked opium for 30 years."

"Have you read De Quincey's Opium Eater?"

"I have . . . I was an opium smoker before I read his book. I believe he has drawn more on his imagination than on experience . . . I believe De Quincey's book is a pack of lies."

"Why do you smoke?"

"Because I must; I could not live without it. I smoke partly because of the quiet enjoyment it gives, but mainly to escape from

the horrors which would ensue did I not smoke. To be 24 hours without smoking is to suffer worse tortures than the lost."

"But does not smoking make you wretched, just as drinking would?"

"No; I require about twelve pipes, then I fall into a state of somnolence and complete rest. When I awake, I feel all right, and can attend to fixing up the house. I am brisk, and can work as well as anybody else. I do not feel sick or nervous, neither have I the inclination to smoke more opium."

"Then why do you return to the drug?"

"Ah! that's it; there is a time when my hands fail me; tears fall from my eyes; I am ready to sink; then I come here and for a few bits have a smoke which sets me right. There is too much nonsense talked about opium smoking. Life without it would be unendurable for me. I am in excellent health; but, I suppose, everyone has their own troubles, and I have mine."

"I do not want to be offensive, but *are you what is called a fast woman?*"

"I am. But you would be greatly mistaken if you imagined that all the women who come here are of that character. In San Francisco I have known some of the finest people visit opium houses, and many respectable people do the same here."

"Are women of your class generally addicted to opium smoking?"

"No; they are more addicted to drink, and drink does them far more harm. Drink excites passion, whereas this allays it; and when a fast woman drinks she goes to ruin pretty quick."

"How have you been treated by Chinamen whom you have met in such places?"

"They never interfered with me in the least. Waking or sleeping, one act of rudeness from a Chinaman I have never experienced. In that respect they are far superior to white men. Unless you speak to them they will not even speak to you; and, indeed, after the first whiff of the opium you have no desire to speak. You rather resent having to speak or being spoken to; and when you want the smoke the desire to get your pipe ready is far too earnest a business to allow of any desire for idle talk. But I have known Chinamen who were not opium smokers, and I believe they are far more certain not to offend or molest a woman than white men, especially white men with a glass in."

"Have you anything else to add?"

"No; I will say this, though: that if opium houses were licensed as drinking saloons are one need not have to come into such holes as this to smoke. There could be nice rooms with nice couches, and the degradation would be mitigated. At all events I think the government that will not license an opium saloon should shut up public houses and hotels where they sell vitriol for whiskey and

brandy, and where men kill themselves with a certainty and a rapidity beyond the power of opium."

The views of this "fast" woman were held by many people during the late 1800s, and there was little-empirical evidence with which to challenge them.

The Oriental population (both Chinese and Japanese) settled mainly in British Columbia and hence was a more visible presence there than across the rest of the country. Because they were concentrated in Vancouver, the Fraser Valley, and Vancouver Island, they appeared especially numerous to whites in those areas (Roy, 1976). Restrictive legislation forced them into a few activities such as agriculture, lumbering, fishing, and small retail businesses. Like many peoples forced into a marginal position, the Orientals proved to be hard-working, and their economic success provoked charges of "unfair" competition among those in the same endeavors. Thus much of the concern about opium smoking was not because it was a dangerous activity but because it was a Chinese activity. Since the Chinese were a distrusted, even despised collection of heathens and immoral people, opium use was reprehensible on the face of it.

Examples of anti-Asiatic feelings in British Columbia are too numerous to catalogue and only a few need be mentioned. Asiatic Exclusion Leagues were formed in most British Columbia cities and they worked to have stronger immigration laws and heavier controls on Orientals and East Indians. In 1875 the government of Canada imposed a poll tax of \$50 on Chinese (but not Europeans) brought into the country by employers; in 1903 it was raised to \$500. For many years Orientals were denied the right to vote in British Columbia elections. Men could not bring their families to Canada (and thus looked to opium to fill in the depressing recreational hours). There was also legislation which prevented Chinese from hiring white women and thus being able to corrupt them (Roy, 1976). Many were denied naturalization as Canadians.

Much of the concern about Chinese was that they posed an intolerable economic threat, since they would work for low wages and had few expenses (Morton, 1974). Many spoke of the need for a "white British Columbia." The Anglican Bishop of New Westminster as late as 1923 stated that "we should have a province that will be white, that will be British and that will be Christian" (Roy, 1976).

The worry about opium use was not exclusively related to the "Chinese menace." Religious leaders interested in the temperance movement, especially in the Methodist and Presbyterian churches, saw opium as an evil akin to alcohol—another unearned pleasure leading to degra-

dation. There was also an international movement against the opium trade in which churches took a strong role (see chapter 9 on international laws). Other countries such as the United States, Australia, and New Zealand had passed controls on the importation and manufacture of opium, and the same was certainly in the air for Canada. What is surprising is the lack of suitable evidence available about the extent of use and the ensuing problems.

The "Oriental Question," although not crucial, was certainly important in having the first law about opium passed in 1908. William Lyon Mackenzie King, who was Deputy Minister of Labour at the time, was sent to Vancouver by the Prime Minister, Sir Wilfrid Laurier, to investigate claims arising from anti-Asiatic riots in Vancouver in 1907 (Cook, 1969a; Morton, 1974). While there he was unexpectedly presented with two claims from Chinese opium manufacturers for \$600 compensation.

It seems incredible that King did not know that opium had been legally manufactured, sold, and used in Canada for 50 years, but that appears to be the case (Morton, 1974). King was, of course, a rather timid bachelor and a God-fearing man who was easily scandalized.

King received a telegram from Laurier asking him to investigate the opium question. After a desultory investigation, he prepared a report which included some lurid material on opium users, a few court cases, and his shocked observations on how easy it was to purchase opium in Vancouver. His report emphasized the need to assist in the international control of opium and to prevent the spread of opium use to whites, especially women. King was later involved in the international movement to control opium and was clearly interested in the topic, for he suggested later improvements to Canadian laws as well.

King's report and recommendations were dated June 26, 1908, and by July 13 the Commons had passed the Opium Act prohibiting the sale and importation of opium for non-medical reasons. The speed of the reaction in the government shows how little public debate took place about the law. It also illustrates just how quickly the government was willing to move when suggestions on narcotics laws were received from the right quarter.

THE FIRST NARCOTIC CONTROL ACT

The Opium Act of 1908 specified new and rather lenient penalties for opium offenses. It prohibited only trafficking and possession for sale, not simple possession itself. Possession of opium for sale and trafficking in opium had a \$50 minimum and a \$1,000 maximum fine with an

option of up to three years in jail for importation and manufacture. Changes in 1911 included penalties for possession of or for smoking opium (maximum of \$50 or three months) and for the possession of opium equipment or for being found in an opium den (maximum of \$100 or one month). The offenses directed against opium users and possessors were an important addition which greatly facilitated police work in securing convictions. As expected, it was far easier to find people in opium dens than to find traffickers.

Canadian drug laws were greatly strengthened over the next 20 years. The 1922 revisions allowed the deportation of convicted aliens for trafficking and a maximum of seven years. Selling or giving drugs to minors carried a minimum six-months penalty.

By 1929 there were a total of 28 offenses altogether, and they now included filling or presenting forged prescriptions. Whipping was allowed at the discretion of the court for possession, trafficking, or sale to minors, and fines were also increased. Cannabis was added to the controlled drugs in 1923. The right to search premises for drugs without a warrant was also introduced in 1923. Persons found in a building containing a narcotic drug were deemed to be in possession of the drug, even though they may never have even seen it.

The effect of these laws on convictions for opium-related offenses is interesting to examine. In 1912 there were 342 convictions under the Opium and Drug Act. There were none in the Yukon or Northwest Territories, Prince Edward Island, Nova Scotia, or New Brunswick, and only one in Alberta, and a few each in Saskatchewan and Ontario. Nearly half were in British Columbia (148), about a third in Quebec (101), and a sixth in Manitoba (48). There were only seven women convicted, and they were in Quebec, Manitoba, and Saskatchewan—not in British Columbia, the centre of anxiety about the corruption of women by Chinese opium fiends. Almost all of the cases received a fine only, and only 35 (including both men and women) were sent to jail.

Over the years between 1911 and 1931 the numbers of convictions changed greatly, probably in response to the strengthening legislation. Table 1 shows the convictions for 1912 to 1965. It can be seen that after 1914 convictions increased to more than 1,300; there were large decreases during the war years and again after the stricter laws of 1921. By the later 1930s, opium had largely ceased to be much of a problem in Canada. Convictions had been decreasing throughout the 1920s from a high in 1921 (1,866 cases) to a low in 1935 (165 cases). The majority of convictions after 1935 were not for opium but for other drugs covered by the legislation such as heroin, other opiates, and cocaine. As would be expected, imports of crude opium also fell drastically, from 88,013 lb in 1908 to virtually zero in 1930.

By the early 1930s illicit drug use in Canada had reached one of the lowest points ever achieved since the first drug laws were enacted. No doubt the legislation had effectively reduced the opium epidemic. In the process, however, large numbers of Orientals were deported or imprisoned because of their traditional use of a drug which still had not been shown to be harmful either medically or socially. There were, moreover, disquieting indications that the strict legislation was contributing to the development of an illicit traffic, especially in heroin and cocaine, which are highly concentrated and thus easy to conceal for importing and trading. There were also many signs that addicts were turning more to prescription drugs and doctors' offices. It has been shown in several countries that suppressing the opium traffic leads to the development of a heroin trade (Westermeyer, 1976), and Canada was no exception.

DEVELOPMENT OF OPIATE USE IN CANADA: 1930-65

The period after the decline of the opium menace was one of great change in drug use, although the change was rather slow in coming until after the Second World War. The 1930s and 1940s saw the appearance of new drugs on the scene, such as cannabis and cocaine, as well as many new opiates and derivatives. This was also the period when heroin first became important. But it was during the 1950s and 1960s that illicit drug use crossed new social and geographic barriers and became a nationwide phenomenon.

The year 1965 has been chosen as a convenient watershed for this period for several reasons. It marks the first development of real treatment facilities for addicts and is the point at which the modern drug era among young people began. Also, survey data on numbers of users began to be available in the mid-1960s. After 1965 numerous new drugs such as speed, LSD, and other hallucinogens came to be readily available in Canadian cities, the hippie movement began, and a vast explosion in drug use was evident everywhere. The period after 1965 is described for each drug separately in later chapters.

As can be seen from the convictions data in table 1, for most of the years from 1930 to 1945 there were fewer than 250 convictions for the whole country, and in 1942 and 1943 there were only 136—the smallest numbers ever recorded. Admission of addicts to mental institutions were also at a low level; only 30 to 40 people per year were first admissions, with a small decline during the war years. (Figures are shown in table A-1 in the appendix.)

The period saw little change in narcotic laws (Solomon and Green, 1981). Cultivation of opium and cannabis were added as offenses in

TABLE 1

*Convictions under the Opium and Drug Act and
Its Successors, 1912-1965*

Year	Total	Year	Total	Year	Total
1911	0				
1912	342	1930	446	1948	316
1913	684	1931	316	1949	353
1914	1,044	1932	-	1950	356
1915	1,348	1933	230	1951	353
1916	1,165	1934	218	1952	367
1917	790	1935	165	1953	337
1918	915	1936	182	1954	306
1919	1,195	1937	220	1955	349
1920	1,797	1938	183	1956	382
1921	1,866	1939	226	1957	400
1922	1,858	1940	234	1958	488
1923	1,297	1941	273	1959	565
1924	996	1942	136	1960	467
1925	823	1943	136	1961	464
1926	743	1944	194	1962	334
1927	491	1945	212	1963	318
1928	608	1946	247	1964	325
1929	616	1947	341	1965	377

Source: *Statistics of Criminal and Other Offences*, Cat. 85-201, Statistics Canada.

1938, and some opiates and opiate-like synthetics added to the narcotics list. Penalties were essentially unchanged.

The Second World War probably disrupted the flow of illegal narcotics into Canada (Solomon and Green, 1981). Nevertheless, numbers of convictions or admissions to treatment were little affected. Possibly addicts shifted to legal opiates or synthetics. However, after the war convictions increased steadily to reach a peak of 356 in 1950 and another of 565 in 1959. Admissions to mental institutions showed an even greater growth in the 1950s (26 cases in 1950, but 165 in 1959).

Great concern was expressed about the growth of heroin addiction in large Canadian cities, especially in British Columbia. The concern resulted in the establishment of special studies of addiction in British Columbia (Stevenson *et al.*, 1956) and in the creation of the Narcotic Addiction Foundation to do treatment and research with addicts. Heroin addiction also appeared in Toronto and Montreal in the early 1950s, although the numbers of cases were small. At the time about 60% of all Canadian street addicts resided in British Columbia, with most in the Vancouver area (Rootman and Richman, 1975). In 1956 the rate of heroin addiction was 158 per 100,000 in British Columbia but only 11 per 100,000 in the other provinces.

In 1956 the Bureau of Dangerous Drugs began to publish data on "known users" in Canada. The data are derived chiefly from court and police records and from pharmacy and prescription information. Although they have limitations, as do all such data, they provide useful indicators of trends in drug use. In 1956, there were three categories of narcotics users established:

- Illicit users—known users of heroin, opium, morphine, and other natural and synthetic opiates. They receive their drugs from illegal or "street" supplies. Most have been convicted under the narcotics laws.
- Licit users—users of morphine or other opiates given by physicians for therapeutic purposes. They have some medical condition, usually chronic, which requires large doses of painkillers over a long period and have become addicted. They do not generally have criminal backgrounds and are rarely convicted of drug-related offenses.
- Professional users—members of professions coming in close contact with drugs, especially physicians, nurses, pharmacists, and others, who take narcotics illegally from a legal supply. They may or may not be addicts. Very few are convicted of drug-related offenses.

In 1956 there were 2,678 illicit users, 352 licit users, and 211 professional users in Canada (Rootman and Richman, 1975). By 1966 the numbers of

illicit users had grown to 3,182; the licit and professional users had actually decreased in number (259 and 151 respectively). Virtually all of the increase in illicit users had occurred in British Columbia (from 1,570 to 2,023). Also, much of the increase was among females both in Canada as a whole and in British Columbia. By 1965 British Columbia had a heroin epidemic of substantial proportions for a small province.

During the 1950s there was also considerable growth in the types of illicit drugs used in Canada. Although cannabis was first imported into Canada in the 1930s, it was used only sporadically until the 1950s, when it became popular among the "beat generation"; since data on convictions for cannabis-related offenses did not become available until 1968, earlier trends are difficult to assess.

In 1956 there was only one cocaine user known to the Bureau of Dangerous Drugs, but there were 49 by 1971. Known users of opiate synthetics increased from 25 cases in 1956 to 338 by 1966 and 635 by 1971, mostly addicts seeking to supplement their heroin with drugs from doctors and pharmacies. LSD also began to be used as a recreational drug to provide insights and new perceptions. It was heavily touted by many professionals as a treatment for alcoholism, neurosis, and even schizophrenia. Street availability of LSD increased greatly during the mid-1960s to reach a peak at the end of that decade.

THE GROWTH OF MEDICAL AND RESEARCH INTEREST IN ADDICTION

An intriguing shadow on the history of drug abuse in Canada has been the very slow development of scientific and medical interest. While this lag has been noticed by earlier authors (Cook, 1969b, 1970), it has not been explained in any adequate way. Canada alone among the developed countries with a drug abuse problem had virtually no medical or scientific data on drug abuse until the 1950s and very little before the 1960s. Almost all early data describing the problem and how it was changing came from law enforcement sources—chiefly the RCMP drug squad, first developed in 1920. A few fragmentary data on hospital admissions and deaths were available, but they amounted to little, since addicts were rarely treated and even more rarely died from addiction. Maintenance treatment for addiction was unavailable from physicians until the 1960s, for those in legal control defined maintenance as beyond the scope of medical treatment. Individual physicians and medical associations had little freedom in defining good medical practice with regard to treating addicts.

Prior to the 1950s, almost no medical interest in studying or treating addicts can be discerned. Canadian medical journals from before the Second World War contain almost no papers on addiction, its causes or

treatment. During the 1930s and 1940s only a few dozen people yearly were treated as addicts in mental institutions, and the number fell as low as five in 1948.

The journals do, however, contain a number of stern warnings about the physician's duties by RCMP officers, chiefs of the Narcotic Control Division, and the Minister of Health, who was in charge of addiction. Editorials and other papers frequently remind physicians about changes in drug laws or new regulations (e.g., Harrison, 1927; Henderson, 1927). C. H. Sharman, Chief of the Narcotics Control Division in Ottawa, often remonstrated with physicians about their treatment of addicts. In a paper published in the *Canadian Public Health Journal* in 1929, he outlined changes in the Narcotic Control Act (1928) and set out a definition of good medical practice. He stated that "attempts to obtain narcotics illegally from legal sources increased 300% in the past three years because of control of illegal traffic." Most such attempts involved forged prescriptions, telephone impersonation of physicians, theft from the mails, and pharmacy burglaries. The new act forbade the telephoning of prescriptions for narcotics. Sharman claimed that what often happened was that the pharmacist would receive a telephone call, ostensibly from a physician, requiring narcotics. The pharmacist's messenger would be met outside the doctor's office by a man claiming to be the doctor, obviously in a hurry, who would sign a forged narcotics order. The man, of course, would actually be an addict or a trafficker.

Sharman also stated that "it is *universally accepted* that any hope of cure [of drug addiction] by the ambulatory method, by which the patient is allowed to take his supply away with him is bound to fail." Physicians were encouraged to use special treatment institutions; however, in most areas of the country there was none.

Certainly it was *not* "universally accepted" that maintenance doses should not be given. Extensive arrangements for maintenance were made in the 1920s in both the United States and Great Britain. In the United States a system of clinics was developed in a number of major cities to give morphine and other narcotics to addicts. Although the American clinics were closed after a trial period, there are many who believe that some provided good care and that others could have been improved (Musto, 1973). In Britain, the Rolleston Committee (Departmental Committee, 1926), which included a number of prominent physicians, recommended that maintenance doses of heroin be given to "stable addicts," and the practice has continued to the present, albeit with some modifications. It was a strange departure from traditionally following American and British practices in medicine and drug control that maintenance treatment was not allowed in Canada. There seemed not to have been any protest on the part of either individual Canadian physicians or their associations until the 1950s.

It is interesting to speculate on why treatment for addiction arrived so late in Canada. The number of addicts in Canada in the 1930s was greater than in Britain, and hence the treatment need greater. Public policy about treatment was definitely set by law enforcement agencies (Cook, 1969b)—but why with so little opposition? Penalties for physicians were considerable under the narcotics legislation, and many must have felt that it would not be worth their while. The Opium and Narcotic Drug Act in the 1930s allowed for imprisonment for up to seven years for conviction and the provision of the lash at the judge's discretion. Records do not show whether any physicians actually received the lash.

Throughout the early part of the century addicts were seen in Canada as “dope fiends” rather than sick people in need of treatment. An influential book by Judge Emily Murphy, *The Black Candle*, published in 1922 and serialized in a national magazine, set the stereotype. The book contains many references to non-white “drug fiends” seeking to deprave white women. It also offers many lurid pictures of addicts. One, of a woman in bed with an opium pipe, is captioned “An open-eyed insensate in the dread Valley of the Shadow of the Drug.” Another shows a woman and a black man, partly clothed, lying on a bed and obviously up to no good. The caption warns: “When she acquires the habit she does not know what lies before her; later she does not care.” Drug addiction was described as a “living death” and addicts as depraved, degenerate, criminal, and totally unreliable. No self-respecting doctor could imagine having to “treat” such people. Judge Murphy in her chapter on “Salvage” essentially called for stiffer laws more consistently applied. She did suggest that provision be made for “the placing of addicts in whatever institution is indicated by their particular case. This may be a jail, a hospital, a prison, farm or an asylum, as advised by the physician.” She did not believe in voluntary treatment but only in institutions as substitutes for jail, and run—for addicts at least—in much the same manner.

The view that addicts merited neither treatment nor serious study began to change in the late 1940s. It was slowly recognized that there had been a serious postwar increase in addiction, especially in British Columbia. Local community interest led to the commissioning of a study of the history and nature of current addiction in British Columbia (Stevenson *et al.*, 1956). That two-volume work is a classic and repays careful study even today. It led indirectly to the creation of the Narcotic Addiction Foundation of British Columbia, which had as its main job research and treatment for addiction. In 1956 an experimental treatment centre for addicts was opened in an Ontario reformatory (Beech and Gregersen, 1964), and in 1960 the Addiction Research Foundation of Ontario began to take an interest in addiction to drugs other than alcohol.

The pharmacological treatment of addicts was not actually allowed until the change in the Narcotic Control Act of 1961. Restrictions on the freedom of physicians to prescribe narcotic drugs were lifted, and medical associations could set standards for treatment. One of the first efforts to establish good medical standards was made at a meeting of federal government officials, interested physicians, and Addiction Research Foundation staff at a semi-secret Conference on Narcotic Addiction held in Niagara Falls in 1963. At this conference many of the issues and problems of prescribing narcotics were discussed.

Later a committee of the Canadian Medical Association met and in 1965 published a statement entitled "Good Medical Practice in the Care of the Narcotic Addict" (Ferguson *et al.*, 1965). This committee recommended that addicts be treated with methadone in clinics or hospitals and that withdrawal not be under the care of individual physicians. It stated that individual physicians could try ambulatory treatment with drugs such as methadone, but it was risky. With that set of recommendations, the first clear guidelines were established allowing physicians to treat addicts with maintenance doses. Control of treatment decisions for addiction finally passed to the medical profession, although drugs such as morphine and heroin could still not be prescribed in maintenance doses.

Much of our progress in Canada in understanding drug abuse dates from the early 1960s. The creation of special agencies for drug problems in Ontario and British Columbia led to the development of centres for treatment and research. These became the main centres in Canada for research and training, and their staffs provided consultation to other governments and to policy-makers in their own areas. Much of the research to be reviewed in this book was done either at the Narcotic Addiction Foundation of British Columbia or the Addiction Research Foundation of Ontario. Both agencies were helped by the statement by the Canadian Medical Association about the standards for medical care for addicts. It provided a way of involving physicians which had not been possible before because of lack of clarity about what should and could be done.

SUMMARY

Drug abuse has not always been a problem in Canada. Neither Canadian Indians nor Inuit used drugs before Europeans came to North America. The early phase of drug problems was related to pharmaceuticals, patent medicines, and nostrums which could contain any narcotic or stimulant drug. However, these were greatly limited by the Proprietary and Patent Medicines Act of 1908 and its later revisions.

At the same time as patent medicines began to be a problem,

opium smoking was practised among the Chinese in British Columbia. Although there was strong public reaction to opium smoking, little was known of the extent of use or the problems it created. Opium smoking largely disappeared as a result of strong narcotic control legislation beginning 1908. After opium use was controlled in the 1930s there followed a period of heroin use, especially in British Columbia. Before 1960 there was almost no interest in heroin problems on the part of medical or scientific people in Canada. Treatment facilities were not available except in prisons, and research was non-existent. However, by the mid-1960s interest had developed in British Columbia and Ontario and specialized agencies were established to study drug problems and provide treatment. Much of our progress in dealing with drug problems in Canada dates from that time.

SECTION II

The Nature and Extent of Drug Use and Abuse

Introduction

In this section we are concerned with the types of illicit drugs most often used in Canada. Our interests are confined to illicit drugs because they have not had the attention in Canada that drugs such as alcohol and tobacco have. Illicit drugs represent different problems of social and legal controls than do drugs with a long tradition of sanctioned use. They also attract more social deviants as users and hence are more difficult to study. For each drug type, some information is presented on the availability and method of taking the drug and its major positive and harmful effects. This review is not meant to be exhaustive. The emphasis is on the numbers of users in Canada and their characteristics and on recent trends in use. Relatively little attention is paid to the use of these drugs in other countries.

The major drug types in Canada include cannabis, heroin and other narcotics, stimulants, hallucinogens, and glue and other inhalants. Although each of these types involves a variety of different drugs or combination of drugs, attention can be paid here only to the major ones. Some of the drugs described are always illicit (for example, hallucinogens), as there is no accepted medical use for them. Others such as cocaine, methadone, and amphetamines are licit when they are medically prescribed; otherwise they are illicit and must be obtained illegally from street suppliers or by theft from doctors or pharmacies. The category of glue, solvents, and vasodilators creates problems. The sale of these substances is almost always legal, although their use as drugs by juveniles is frequently not legal. Although they do not quite fit the category of "illicit" drugs, inhalants have no traditional, approved use as drugs and hence they were included here. Drugs such as tranquillizers, sleeping pills (barbiturates), and painkillers can be bought on the illicit market, but so little of their use is illicit that they have been left out.

Cannabis Use and Its Problems

Few could doubt that cannabis is the most important illicit drug used in Canada, in terms of both numbers of users and growth of the problem. Cannabis use is usual and expected in many young populations now, and we can be sure of at least some growth in its future use. Cannabis is also the drug which has been of most interest to both young people and their parents. For the young, and some not so young, it has come to symbolize the new generation of free-thinking, relaxed, unambitious commentators on society. For the conservative older group, it symbolizes the worst aspect of the atheistic "me generation" who seek pleasure while avoiding as much work and responsibility as possible. The main aims of this chapter are not to take sides in this controversy, but to describe the extent of cannabis use in Canada, some of its problems, the way usage has changed over time, and the characteristics of users.

WHAT IS CANNABIS?

Cannabis usually refers to both the cannabis plant and the various products which can be derived from it. The plant grows wild in almost all parts of the world, including Canada, except in the polar regions. Of course, it can be cultivated as well. For centuries cannabis plants, called hemp, have been cultivated for fibre for making rope, for their oil, or for their drug properties. There are more than 60 chemicals, called cannabinoids, which are unique to the plant. A few of these chemicals can cause changes in mood, perception, and thought. The main one seems to be delta-9-tetrahydrocannabinol (or THC in street terms). THC is found in many parts of the cannabis plant but is most abundant in the resin secreted by the upper leaves, bracts, and flowers. Street cannabis comes in three forms: marijuana, the tobacco form, made from the dressed leaves, stems, and seeds and containing a maximum of about 5% THC; hashish, made of dried and pressed flowers and leaves with some resin, containing up to 12% THC; and hashish oil (hash oil), a crude extract usually contains about 20% THC, although rare samples

may have up to 60% THC. Samples grown in Canada show a concentration of about 2% THC or less in marijuana; the concentration in hashish and hash oil has never been established. All forms are usually smoked in cigarettes or pipes. However, marijuana and hashish may be baked in cakes, cookies, or brownies. Cannabis preparations are almost never injected.

For the sake of simplicity, we will use the term "cannabis" in a generic sense to apply to any of the above, unless one is specifically intended.

SOURCE OF CANNABIS AND AVAILABILITY IN CANADA

Cannabis seems to be available now in virtually all parts of Canada including large cities, rural areas, and the far North. A study of perceived availability of cannabis among Ontario students in 1977 (Smart, 1977) showed that most students stated that it was easy to obtain but not so easy as alcohol or tobacco. As expected, it was easiest to obtain in areas with large numbers of users. Marijuana, hashish, and hash oil seem to be available nearly everywhere now, although hashish and hash oil may be spasmodically unavailable.

The source for cannabis varies considerably. It can be grown in Canada, but the THC content in the marijuana is much lower than in imported varieties. For example, Baker *et al.* (1980) found an average of 3.7% in samples from Jamaica and 5.5% in samples from India. Hashish from Canadian-grown plants may contain about 5% THC (Green and Miller, 1975), again a low value compared with international samples, which have up to 11%. The low quality of domestic cannabis makes it likely that most of what is smoked is imported. In fact, we do not know how much is locally grown and how much is imported. Recent statistics show that the amount seized in 1979 was 34,688 kg plus 1,477 kg of resin and 261 kg of liquid cannabis. The amounts seized have been increasing since 1970. There has also been a very great growth in seizures of hashish and hash oil, a product almost unknown in Canada before 1970. However, the importance of home-grown cannabis should not be underestimated: in 1979, 125 people in Canada were convicted of cultivation but only 33 of importing. (Since the latter charge carries a seven-year minimum sentence, it is rarely laid unless the amounts are large: hence the importing is probably underestimated.)

Cannabis enters Canada in a variety of ways. Amateur importer-users and small-scale dealers bring small amounts from their travels in the Middle East, South America, Europe, and Great Britain (Sorfleet, 1976). Originally this was the only method used. Now, far larger opera-

tions exist for bringing much of our cannabis from Mexico and Colombia, often via the United States. Some hashish and hash oil is also shipped from Morocco and Lebanon. A participant-observation study of cannabis dealing in Ottawa by Sorfleet has shown that even in a small city there is a well-organized network of importers, large- and small-scale dealers, and amateur dealer-users.

THE EFFECTS OF CANNABIS

The effects of cannabis depend greatly upon the concentration of THC in the product, the method of administration, and the experience of the users. Effects from hashish and hash oil are more striking and longer-lasting than those from marijuana. Smoking the drug gives more rapid effects than eating it. Cannabis users usually require some training or experience in order to get the euphoric effects. Expectation of and knowledge about such effects seem to be necessary in order to achieve them.

The main short-term effects of cannabis (Clark and Nakajima, 1968; Tart, 1971) include:

- Euphoria or a "high." Users feel relaxed, happy, and floating in pleasurable experiences. Many report having important insights.
- Hilarity. Users frequently laugh and talk more than usual, often in a rather silly, repetitive fashion. Later they lapse into a quieter, even sleepy state.
- Heightened sensation. Many users report more pleasure in listening to music or looking at art.
- Misperception of time. Users usually find that time is overestimated; a few minutes seem like an hour.
- An increase in pulse rate and some reddening of the eyes.
- Deficits in attention and impaired short-term memory.

HARMFUL OR UNPLEASANT EFFECTS

Cannabis has numerous effects which range from unpleasant to harmful. There are certain effects that not all users would agree are unpleasant; nor would they even be aware that some are taking place. The literature on harmful effects of cannabis is now very large, and we can do no more than make a brief summary here. Fortunately, these effects have been recently summarized by an international group of scientists meeting under the auspices of the World Health Organization and the Addiction Research Foundation of Ontario (ARF/WHO, 1981a). We draw extensively on their conclusions.

The main unpleasant effects of cannabis are as follows:

- Many users, especially the inexperienced, have minor somatic reactions: for example, pains in the throat and chest, giddiness, increased pulse and inconsistent changes in blood pressure, loss of body coordination, dry mouth, nausea.
- Some users, especially those taking large amounts, experience unpleasant reactions ranging from anxiety and restlessness to confusion and hallucinations. Usually these reactions pass relatively quickly and require little treatment.

Certain harmful effects can also be found among heavy users:

- Daily or more frequent use can produce a chronic intoxication which may take days or weeks to disappear.
- Respiratory toxicity is common in heavy users. It may take the form of bronchitis, sinusitis, or chronic pulmonary obstruction.
- Chronic use results in tolerance to many of its effects. At least mild dependence has been found with some users.
- Use impairs short-term memory, thinking, and learning abilities. These effects in heavy users may be related to early school dropout and other learning-related problems.
- Studies with laboratory animals have demonstrated impairment of the central nervous system and of endocrine and reproductive functions. Although not convincingly demonstrated in humans, they represent a real risk for heavy users.

FREQUENCY OF CANNABIS USE: THE EARLY DAYS

It is difficult to be sure when cannabis use first began in Canada. Official government data from the early part of the century do not show which deaths, hospital admissions, or convictions were due to cannabis or to other drugs. There were no special surveys of use in general or specific populations until the 1960s. Before then we are left with only incidental information, supposition, and some journalistic reports.

It has been said (Green and Miller, 1975) that cannabis plants were first grown for hemp production in Nova Scotia in 1606. Hemp production continued for several centuries for the making of rope, cord, and sails. Some cultivation of hemp for fibre continued until the 1930s, when it was outlawed and all hemp henceforth imported. There seems to be no evidence that early settlers used hemp as a drug. In any case, fibre-type hemp is very low in THC content.

Many patent medicines and pharmaceuticals contained cannabis

until the 1930s, but all have now disappeared. Most were cough syrups and sleeping aids. Cannabis can still be prescribed and cannabis preparations can in theory be legally sold on a physician's advice, but normal legal supplies of cannabis do not exist. In certain special cases—for example, certain eye diseases and nausea reaction to anti-cancer drugs—cannabis can be provided with the agreement of federal health officials. For example, physicians at the Addiction Research Foundation recently treated a case of eye disease with cannabis.

There are indications (Le Dain, 1972a) that cannabis use was common around 1910 in the United States and that use was widespread in some segments of American society by the 1920s, in particular among criminals, sailors, and jazz musicians, some of whom must have frequently traveled to Canada. It seems very likely that cannabis use—at least in the marijuana form—had started in Canada by the late 1920s. It was probably rare in the general population and confined to much the same groups as in the United States.

Information about cannabis use was clearly a problem for Judge Emily Murphy (who also called herself Janey Canuck) in her early portrayal of the Canadian drug problem. Her book *The Black Candle* (1922) has a chapter “Marihuana—A New Menace,” but it contains no information on marijuana use in Canada. Instead, the reader is treated to accounts of use from the United States, England, and India, and even certain fictional material from *The Count of Monte Cristo* and *The Arabian Nights*. There are no pictures of “hasheesh addicts” (as there are of opium addicts); nor are there case studies of Canadian hashish users, as there are for narcotics users. Nonetheless, *The Black Candle* and the public reaction to it has been credited (Solomon and Green, 1981) with influencing the government to add cannabis to the Opium and Narcotic Drug Act in 1923.

After the time of Judge Murphy's book, cannabis use flagged. There were only a few hundred convictions nationally for all Opium and Narcotic Drug Act offenses, and there were even fewer after cannabis was added to the schedule. Convictions for the indictable offenses in the early 1930s fell as low as 59 per year, and most of those must have been for narcotics.

An interesting paper in the *Canadian Medical Journal* in 1934 (anonymous) gives a brief history of the use of cannabis in the early 1930s. It is said that the first importation of cannabis from outside North America occurred during 1931. Cannabis cigarettes were sold in Walkerville, Ontario, for \$1.00 each (a phenomenal cost during the height of the depression, when you could buy a meal for 25 cents). They contained Indian hemp, which came into Canada from Detroit. It was stated that by April 1932, the drug was being sold in Ottawa dance halls and there

were “30 young cannabis addicts.” By May 1933, cannabis reached Montreal, and in July 1934, backtracking, it came to Toronto.

POSTWAR CANNABIS USE

The current high rate of cannabis use is unusual in Canadian history. Cannabis must have been rare at the close of the Second World War, although some Canadians were probably given the drug by American soldiers, a group known to be heavy users (Le Dain, 1972a). The “beat generation” of the 1950s advertised the values of cannabis use to the American middle class (Polsky, 1967). Outposts of a Canadian “beat generation” (really a part-generation) could be seen in some cities, such as Toronto and Vancouver. Cannabis use among middle-class people in Canada began in the mid-1950s largely in response to the movement in the United States.

The first available survey of use seems to be that of Paulus and Williams (1966), who made a study of some 50 cannabis users in Vancouver in 1965. Their sample was not representative. It included 38 males and 12 females. The average age was about 23, and almost all were single. Most had recently moved to Vancouver. Many gave their occupation as “artist,” although about half were on unemployment insurance. The majority had used other drugs such as LSD and peyote and drank alcohol heavily at times. They were essentially young, artistic, mobile adults in search of any identity in some non-conformist sphere.

Another early study of use was done in Toronto in 1965 by Colclough and Hanley (1968). Among 100 cannabis users they interviewed they found three groups: (1) “beats,” who were residents of “The Village”—a downtown artists’ area of Toronto now disappeared, and were mostly aged under 25; (2) “swingers,” mainly criminals or entertainers, aged 30–45; and (3) “squares,” who were upper-middle-class professionals aged 30–50. Many in their sample claimed to have used cannabis for 10 years or more; hence there must have been at least some use in Toronto in the mid-1950s. There was no indication of hashish or hash oil being used at that time.

CURRENT CANNABIS USE

[Prior to the mid-1960s there was almost no use of cannabis in any Canadian youthful or high school population. It was confined to older people long out of school and often well established professionally or artistically. However, the late 1960s brought a wave of interest in cannabis which has continued unabated into the present. The first indications of use in high schools began in 1966 and 1967 in Toronto. One of the first studies of cannabis use was made among Toronto students in 1968 and

then repeated every two years thereafter (Smart and Fejer, 1975). In the early 1970s, a large number of studies of cannabis use were undertaken in many parts of Canada, some focusing on high schools and colleges and on specially selected groups thought to be at high risk for cannabis use. Currently, fewer studies are being done of cannabis use than were done in the early 1970s. It seems that people have become accustomed to cannabis and no longer wish to know the extent of use with any precision.

CANNABIS USE AMONG HIGH SCHOOL STUDENTS

Table 2 summarizes the main features of the largest studies of high school students done in Canada. The table is not meant to be exhaustive, but it includes especially the major studies done at several points in time, and studies from all parts of the country. Studies have been done in Ontario (Smart and Fejer, 1975; Smart *et al.*, 1980; Smart *et al.*, 1981a); British Columbia (Russell and Hollander, 1974); Prince Edward Island (Love and Killorn, 1974); Nova Scotia (Whitehead, 1970; 1971); Quebec (Bilodeau, 1971); and rural Alberta (Bakal *et al.*, 1975). All of these studies use a similar methodology (self-administered questionnaires) and involve large sample sizes.

Although the first study was done in 1968, few studies give any data on trends over time. Rates of use in surveys usually are for use within the previous year, and a few studies ask about the previous six months (e.g., Smart and Fejer, 1975). The studies in table 2, show that the overall rate of cannabis use in the late 1960s was only 6.7% in Toronto and 8.6% in Montreal. The national study of households by the Le Dain Commission (1972a) asked about use in 1970. When students were asked to say what their use had been in earlier years, only 1.9% stated that they used cannabis in 1967/68. Current use of cannabis among students can be determined only for Ontario, where the rate in grades 7 to 13 was 29.9% in 1981.

Rates of use appeared to be much lower in Halifax, rural Alberta, and Prince Edward Island than in Toronto, Vancouver, or Montreal in the early 1970s. Although later comparisons cannot be made, it seems that use levels were higher in large cities than in small cities and higher still than in rural areas. Vancouver in 1970 had far higher rates than anywhere else—twice as high as Toronto and four times as high as Prince Edward Island.

While most students who use cannabis do so infrequently, there are many exceptions. For example, in the Ontario study about half used it less than 10 times in the year prior to the survey. However, about 25.8% used it 40 or more times. It should be noted, however, that this is much more frequent than use of other drugs by the same group. For example,

TABLE 2

Studies of Cannabis Use in Various Canadian Populations

Author	Type of Population	Rate of Use
<i>STUDENT SAMPLES</i>		
Whitehead (1970)	students in Halifax (n = 1,599), 1969	6.6% used in past 6 mths
Bilodeau (1971)	secondary and CEGEP students in Montreal	8.6% used in past 12 mths 1969 23.0% used in past 12 mths 1971
Le Dain <i>et al.</i> (1972a)	secondary school students in Canada (n = 1,200)	1.9% ever used 1967-68 4.8% ever used 1968-69 10.3% ever used 1969-70
Love & Killorn (1974)	students (grades 7-12) in Charlottetown (n = 1,725) 1972	9.4% used in past 12 mths 1972
Russell & Hollander (1974)	students (grades 9-12) in Vancouver (n = 2,496) 1970 (n = 1,732) 1974	38.9% used in past 12 mths 1970 41.5% used in past 12 mths 1974
Bakal <i>et al.</i> (1975)	students (grades 7-12) in rural Alberta (n = 8,967) 1971 (n = 7,704) 1974	11.9% used in past 12 mths 1971 19.5% used in past 12 mths 1974
Smart & Fejer (1975)	students (grades 7, 9, 11, and 13) in Toronto (n = 6,447) 1968 (n = 6,890) 1970 (n = 6,641) 1972 (n = 3,479) 1974	6.7% used in past 6 mths 1968 18.3% used in past 6 mths 1970 20.9% used in past 6 mths 1972 22.9% used in past 6 mths 1974
Smart <i>et al.</i> (1981a)	students (grades 7-13) in Ontario (n = 4,687) 1977 (n = 4,794) 1979 (n = 3,270) 1981	25.1% used in past 12 mths 1977 31.7% used in past 12 mths 1979 29.9% used in past 12 mths 1981
<i>ADULT SAMPLES</i>		
Le Dain <i>et al.</i> (1972a)	adults in Canada	0.6% ever used 1966 0.4% had terminated use 1966 1.3% ever used 1967 0.7% had terminated use 1967 2.0% ever used 1968 0.9% had terminated use 1968 2.8% ever used 1969

TABLE 2 (continued)

Author	Type of Population	Rate of Use
Le Dain <i>et al.</i> (1972a)	adults in Canada	1.6% had terminated use 1969 3.4% ever used 1970 2.4% had terminated use 1970
Smart & Fejer (1973)	household sample in Toronto, adults (n = 1,200) 1971	8.4% used in past 12 mths overall 12.2% used in past 12 mths male 5.5% used in past 12 mths female
Smart & Goodstadt (1977)	household sample in Ontario (n = 1,015)	5.8% used in past 12 mths overall 9.2% used in past 12 mths male 2.3% used in past 12 mths female
Smart & Liban (1978)	household sample in Durham, Ontario, 18 and over (n = 993)	9.7% used in past 12 mths overall 23.5% ever used 5.2% used in past mth
Rootman (1979)	household sample in Canada (n = 1,057)	20.2% ever used male 13.8% ever used female 12.2% used in past 12 mths male 7.2% used in past 12 mths female 5.0% used in past mth male 1.9% used in past mth female
Smart & Adlaf (1982b)	household sample in Ontario (n = 1,040)	8.6% used in past 12 mths overall 12.6% in past 12 mths male 4.3% in past 12 mths female
<i>SPECIAL SAMPLES</i>		
Smart & Fejer	LSD (mostly polydrug) users (n = 100)	100.0% ever used 61.0% used over 100 times
Kim (1970)	young prison inmates (n = 71)	58.0% used before arrest marihuana 62.0% used before arrest hashish
Kim (1970)	young transients (n = 100)	66.0% ever used
Cox & Smart (1972)	speed (all polydrug) users (n = 75)	100.0% ever used
Annis & Watson (1975)	students (grade 9) in Timmins, Ontario (n = 88) dropouts (n = 827) non-dropouts	16.0% initial interview dropouts 24.0% follow-up dropouts 11.0% initial interview non-dropouts 17.0% follow-up non-dropouts
Erickson (1980)	cannabis criminals (n = 85) 1974	99.0% ever used 84.0% used more than once a mth

TABLE 2 (continued)

Author	Type of Population	Rate of Use
Smart & Blair (1980)	household sample in Durham, Ontario, teenagers 14-18 (n = 292)	43.5% ever used 36.6% used in past 12 mths 21.9% used in past mth
Smart <i>et al.</i> (1981a)	household sample in Durham, Ontario, non-students 14-25 (n = 173)	63.0% ever used 32.9% used in past 12 mths 24.3% used in past mth
Liban & Smart (1982)	Indian students (grades 7-13) in Ontario (n = 71) 1979	29.6% used in past 12 mths

only 4.1% who used speed and 4.8% who used glue had also used cannabis 40 or more times. Much more than other illicit drugs, cannabis seems to generate very heavy use.

In the Ontario survey in 1981, some 2.6% of students used cannabis on a daily basis. By comparison, fewer than 1% report the daily use of alcohol. Also, cannabis use is the norm in some groups; for example, more grade 11 males used than did not use it. Now, in high schools, to be a non-user can be slightly deviant.

Of course, cannabis use varies greatly with demographic and social characteristics in the high school population. The number of such factors associated with use in Canada is very great; nevertheless, a number of studies have found similar results. All earlier studies have found that more males used cannabis than females (for example, Whitehead, 1970; Smart and Fejer, 1975). In 1968 about twice as many males as females in Toronto used cannabis (16.9% and 8.6%), but by 1979 the rates were much closer (36.4% and 26.8%).

Age has also been an important variable. Many studies (for example, Whitehead, 1970; Smart and Fejer, 1975) have shown that cannabis use is lowest in the early grades (7 and 9) and the highest grade, with greatest use in the intermediate grades. Usually cannabis use is found to be greater among students whose parents are professionals (Spevach and Pihl, 1976; Smart *et al.*, 1980), but some studies have found it higher among other occupational groups. Several studies (Smart and Fejer, 1972; Annis, 1974) have shown that cannabis use is much more common

among students whose parents use alcohol and tobacco and whose siblings also use cannabis.

CANNABIS USE AMONG CANADIAN ADULTS

Relatively few studies of cannabis use among adults have been made. Table 2 shows data from most of the available studies.

The national study by the Le Dain Commission (1972a) is the only one giving information about use prior to 1970. It estimates that only 0.6% of adults used cannabis in 1966, but by 1970 use had increased by a factor of almost six to 3.4%. However, since 2.4% reported that they had terminated use, the proportion of active users must have been very small. The most recent national study, with data collected in 1978 (Rootman, 1979) showed that 20.2% of males and 13.8% of females—or about 17% of adults overall—had tried cannabis at some time. However, rates of use within the year prior to the study were much lower (12.2% and 7.2%). This study found that rates were higher among young people (39.8% of those under 30 had used), laborers, people who spoke English as a mother tongue, residents of larger cities, and those with high school or university education. As expected, rates of use were higher for residents of Ontario and British Columbia (22.4% and 22.6%) and far lower in Atlantic Canada (10.8%).

Only a few other studies have been done of adults: of adults in Toronto by Smart and Fejer (1973); in Ontario by Smart and Goodstadt (1977) and Smart and Adlaf (1982b); and the Durham Region of Ontario by Smart and Liban (1978). In the two national surveys, the rates for Ontario are similar to those for the country as a whole. The rates for the Durham Region should also be similar to those for Ontario. Therefore, if all of the surveys are examined together, then the rate of cannabis use within the previous year was probably less than 1% in 1966, about 3.4% in 1970, 5.8% in 1976, 9.7% in 1978, and about the same in 1979. The greatest growth in use would appear to be from the late 1960s to the mid-1970s, with some evidence of stabilization after 1978. A recent Gallup Poll study (Smart and Adlaf, 1982b) in Ontario found that 8.6% of adults had used cannabis in 1982; use was much greater among males than females (12.6% and 4.3%). This study showed no statistically significant increase in use of cannabis.

Several studies have found the use of cannabis to be much higher among certain groups than others. Far more young adults (for example, under 25) use cannabis than do middle-aged people. The study by Smart and Fejer (1973) found that a third of those 18–19 had used within the previous year compared to fewer than 1% of those over 40. The study in Ontario in 1976 showed essentially the same results, but more of those

over 50 using. Males are always much heavier users than females—in fact, about four times as many males (9.2%) as females (2.3%) used cannabis in the 1976 study. However, the rates were closer by 1982 (12.6% and 4.3% respectively).

Rates of cannabis use are also much higher in urban adult populations than non-urban. For example, the rate of use within the previous year for Toronto was 13.4% in 1981, whereas it was only 5.5% to 10% for other parts of Ontario.

SPECIAL HIGH-RISK GROUPS

Of course, we would not expect cannabis to be equally popular in all segments of society. In fact, many groups have been studied because they are at high risk for cannabis use. Table 2 summarizes some of these studies. It can be seen that some extremely high rates of use have been achieved. For example, in Erickson's study (1980) of people convicted of cannabis possession, 99% were users (as one might expect); but 84% of these were using at least once a month, and they continued to use after their conviction. Virtually all speed and LSD users studied in Toronto at the height of the 1960s drug craze used cannabis, most very frequently. However, native Indian students when carefully matched to non-Indian students for age, sex, and socioeconomic status have the same rates of use.

School dropouts have also been studied. For example, Loken (1973) found that among young transients in youth hostels, 90% were using cannabis at the time of the study. Annis and Watson (1975) compared dropouts and non-dropouts from a high school in Timmins, Ontario. Dropouts had higher rates of cannabis use both before and after they dropped out of school than did non-dropouts. Also, non-students aged 14–25 in the Durham household survey had much higher rates of use than students: about 63% had used cannabis at some time, 32.9% within the previous year, and 24% within the past 30 days. Among all those aged 14–18 in Durham, 36.6% were users; the highest rate was among non-students.

Deviant groups such as transients and young prisoners in Saskatchewan also had rates of use higher than most people in their age group; 66% and 58% respectively were users (Kim, 1970).

Studies by Sadava and Forsyth (1977) showed relationships between social factors and use among students. Those who began cannabis use had more social support for that use, fewer sanctions against it, parental models favoring use, and families with a lower level of social conformity.

CANNABIS AND ALCOHOL USE

All studies which have looked at the issue have decided that cannabis users are more often drinkers than are non-users (e.g., Russell, 1970; Smart *et al.*, 1971; Smart and Fejer, 1973). Early studies seemed to show that some cannabis users had reduced their use of alcohol since taking up cannabis (e.g., Paulus, 1969; Le Dain, 1972a). One study (Smart *et al.*, 1971) did show that very heavy cannabis users drank less alcohol than light users. However, adults in Toronto (Smart and Fejer, 1973) showed much more alcohol use among cannabis users in general and a tendency to drink for effect. That is, cannabis users often drank alcohol when they were nervous or upset. There are probably several kinds of cannabis users: the average user, who drinks more alcohol than others, and some very heavy users who drink somewhat less.

A recent study with both adults and students in Ontario (Smart and Liban, 1980) examined the connection between cannabis use and alcohol problems. This study used the data from the Durham study and the Ontario high school study. Both students and adults were much more likely to have alcohol problems if they were cannabis users. In fact, the extent of alcohol problems was one of the best variables for predicting whether a person was a cannabis user or not.

CANNABIS AND OTHER DRUG USE

The relationship between use of cannabis and of other types of drugs seems to be a close one for some groups now, although this was not always so. Early studies of heroin addicts in British Columbia (Paulus, 1969; Johnston and Williams, 1971) showed that few had used cannabis, although they did use barbiturates and stimulants. Currently, only a small minority of young cannabis users seem to have had experience with opiates; for example, fewer than 1% of cannabis users in the Durham teenager study had tried heroin. The same is true of the adult sample. At least in Canada, cannabis rarely leads the user to heroin or opiates.

Among students, there is a close connection between use of cannabis and use of other non-opiate drugs. Almost all students who have used LSD, speed, and the other hallucinogens have used cannabis, many for a long time. A study in Montreal, Toronto, and Halifax (Whitehead *et al.*, 1972) found that, compared to non-users, cannabis users were more often cigarette smokers and drinkers. Six times as many cannabis users had used glue, nine times as many had used stimulants, and 62 times as many had used LSD. Similar results were found in the study of adults in Toronto. All adult LSD users had used cannabis. As well, they had much higher rates of use of all other drugs except barbiturates: even tranquillizer use was higher for cannabis users.

It seems likely that cannabis is a "boundary" drug, at least for LSD, stimulants, and hallucinogens. That is, people will have used cannabis before going on to any of the other drugs (Whitehead and Cabral, 1976). However, they can come to the boundary and not go on at all. Most seem to go on. The typologies created for drug users (Smart and Whitehead, 1972) showed that there were four times as many "in-cautious trippers" who used more than cannabis as there were those who used only cannabis. Since this study was done in 1972, it would be worth repeating today to see whether the situation has changed or not.

CANNABIS USE AND PERSONALITY

In the past few years, cannabis use has been seen to be associated with alienation and protest against society, and empirical study supports that perception. Smart *et al.* (1971) examined feelings of alienation among students in Toronto. Cannabis use was consistently greater among students who felt alienated. These students did not report feeling socially isolated, with fewer contacts with other people than they wanted. However, they did feel a certain "normlessness," or a sense that they had no firm rules, standards, or values to worry about. The last feature of alienation in this study was "powerlessness," the feeling that they did not have control over events in their lives. There was a tendency for the heaviest users to be less alienated than the lighter users.

Kohn and Annis (1977; 1978) showed that cannabis users were often sensation seekers, "the kind of people who only enjoy stereo at very high volume, preferably accompanied by strobe lights." They also showed that among high school and college students, cannabis use is more common among people who are more radical in economic and political thinking, whose friends use drugs, and whose attitude towards cannabis legalization is very positive. Cannabis use then seems to have symbolic functions well beyond its actual physiological effects.

Another study by Kohn *et al.* (1979) involved some 269 inmates of an Ontario correctional centre, mostly young males, convicted of their first adult offense. Cannabis was the drug most often used, but many other drugs were used as well. Cannabis use was most common in young men who were attracted to sensation and to thrilling activities, "who are somewhat lacking in practical curiosity" and "are somewhat bored and dissatisfied with their lives." Attraction to unusual states of consciousness was their most striking characteristic.

CANNABIS AND MENTAL HEALTH

Questions have often been raised about the relationship between cannabis use and psychological problems. Studies in the United States

show little correlation (see Jessor, 1978, for a review); however, the United States has a higher rate of cannabis use, and findings there may not be applicable to Canada.

Among students in an Ontario county (Fejer and Smart, 1972a) found that cannabis users had higher rates of anxiety on a scale validated on psychiatric populations. Also, almost four times as many as in the non-user group had received treatment for psychological problems (19% compared to 5.2%).

The study of adults in Toronto found somewhat similar results (Smart and Fejer, 1973). Cannabis-using adults reported good health but had more often been treated for psychological illness. They expressed more depression and feelings of hopelessness. They also had higher scores on a neuroticism scale.

No doubt as cannabis use becomes more common and more accepted in society, most of the differences between users and non-users will decrease or disappear altogether. However, it does appear that in Canada cannabis is more commonly used by people who have a variety of psychological problems and have been treated for them.

SOCIAL AND PSYCHOLOGICAL PROBLEMS FROM CANNABIS USE IN CANADA

Numerous problems arising from cannabis use have been investigated in Canada, although many remain to be studied. Admissions of cannabis users to hospitals for drug abuse or as victims of adverse reactions to cannabis are unusual; for example, only 2.4% of cases admitted to the Emergency Ward of the Addiction Research Foundation in 1981 were for cannabis-related problems. Serious cases of dependence on cannabis or withdrawal symptoms when the drug is stopped have not been described among Canadian users. However, many cases of polydrug use involving cannabis have been seen in treatment centres.

Few social-psychological problems from cannabis use have been examined in Canadian literature. Thurlow (1971) described five male university students aged 18–22 who reported apathy and lack of initiative probably related to heavy long-term cannabis use. They were seen at a university health service at the height of the drug craze of the early 1970s. Similar cases probably exist but have not been reported.

Most of the research on problems in Canada has centred on social or legal problems. Smart and Blair (1980) studied drug problems in Canada among teenagers, such as being arrested or warned about drug use, having parents who think they should use fewer drugs, or thinking

so themselves. About 32% of students with no problem had used cannabis, but 100% with a problem had done so. Cannabis was the most frequently used drug among people who had the problems described above. The most common problem was being arrested or warned by police about drug use.

The extent of adverse reactions to cannabis in general populations has been investigated. Annis and Smart (1973) reported data from two Ontario high school samples, one from Toronto and one from Timmins. In the first sample, 19.1% of cannabis users reported confusion, anxiety, or unpleasant effects on at least one occasion, and 1.9% more than seven times. The rates in the second sample were about twice as high. Reported recurrences were slightly more common among those cannabis users who also used LSD and other hallucinogens. A more recent study in 1981 (Smart and Adlaf, 1982a) showed that rates of adverse reactions had greatly increased among students. However, reactions requiring medical or hospital care were very rare—only 1.1% of users reported them.

Negrete (1974) reported similar data for college students in Montreal. Adverse reactions such as flashbacks (71% of users), prolonged intoxication (31%), paranoia (44%), mistrust (30%), and panic were reported.

Few Canadian studies have been made of traffic accidents and cannabis. Smart (1974) made a study of 296 college students to find out how driving and cannabis use overlapped. About 42% of the student drivers reported cannabis use, but only 62% of those reported driving soon after use. The number of occasions of using cannabis and driving was small—smaller than for drinking and driving. Very few students reported that accidents or violations followed cannabis use—far fewer than after alcohol use. Alcohol was associated with three times as many accidents as cannabis. This study might be worth repeating now that cannabis use has increased so greatly.

The Traffic Injury Research Foundation examined a sample of fatal accidents in Ontario using autopsy data. They found that 1.2% of traffic deaths were associated with prior cannabis use (Warren *et al.*, 1980) and that in 80% of those cases the user had been responsible for the accident. Most of the victims were young males, and many were motorcycle drivers.

It appears very likely that the most common adverse reactions to cannabis are anxiety and confusion, usually minor in nature. School dropout and apathy are also related to heavy cannabis use in several Canadian studies. More serious consequences, such as hospital admissions for psychosis or dependency, are rare. The real rate for cannabis-

related accidents is difficult to decide, but is probably low, except when the cannabis is combined with alcohol.

CANNABIS CONVICTIONS

A major problem for cannabis users is being arrested and charged with some drug-related offense. There are a number of such offenses: for example, simple possession, trafficking, possession for the purpose of trafficking, importing, and cultivating. About 70 % of people so charged are eventually convicted. No other drug approaches cannabis in the number of convictions registered each year. For example, there were 31,718 convictions in 1978 for cannabis, but only 696 involving LSD, the next most frequent drug in the conviction statistics. Table 3 shows the way in which cannabis convictions have changed over the past 12 years in Canada. It can be seen that convictions increased from only 1,429 to 31,738 in 1979, or by a factor of 20. The most common type of conviction is for simple possession (almost 90 % of all convictions). Convictions for trafficking and possession for the purpose of trafficking are far more numerous than for importing and cultivating. In general, trafficking convictions have not increased at the same rate as those for possession, multiplying only by a factor of eight since 1968. Also, there are indications that the rate of convictions has decreased since the peak in 1976.

A detailed study of people convicted of cannabis possession, entitled *Cannabis Criminals*, has been made by Erickson (1980). She studied 95 people convicted in Toronto and followed them up after a year. As expected, they were mostly young (the mean age being 20.8 years), single, male (85 of the 95), with some high school education. The follow-up did indicate that some were not hired because of their conviction. Some showed disrespect for the law and operation of the courts, but very little. The important result was that the conviction had almost no impact on cannabis use: only a small minority discontinued use. Also, whether they used less cannabis or not did not depend upon the penalty received. Those who got the stiffer penalties did not decrease their use more than the others.

Erickson and Goodstadt (1979) also studied how employers react to a cannabis conviction. The researchers applied for various advertised jobs, sometimes claiming that they had been convicted of cannabis possession and sometimes not. Most employers would not hire people who had a conviction, especially where the job involved bonding or a position of trust.

At present, we cannot be sure what the most frequent cannabis problems are. Likely they are minor adverse reactions such as flashbacks or the anxiety and confusion of "bad trips." Convictions for possession

TABLE 3

*Charges and Convictions Involving Cannabis under
the Narcotic Control Act, 1968–1979*

Year	Total persons charged ^a	Persons convicted ^b					
		Total convicted	Simple possession	Trafficking	Possession for the purpose of trafficking	Importing	Cultivating
1968	–	1,429	1,077	211	131	2	7
1969	4,756	2,964	2,313	454	179	6	12
1970	9,977	6,292	5,419	448	356	26	43
1971	12,543	9,478	8,389	476	533	22	58
1972	17,153	11,713	10,695	290	620	33	75
1973	37,668	19,929	18,603	299	914	27	86
1974	43,954	29,067	27,202	429	1,281	24	131
1975	40,282	27,367	25,056	649	1,523	34	105
1976	51,253	33,281	30,523	886	1,709	29	134
1977	52,233	37,812	33,961	1,296	2,376	34	145
1978	45,650	31,718	27,609	1,714	2,215	24	156
1979	–	31,738	27,400	2,008	2,172	33	125

Note: For 1980, substantial changes were made in the reporting period for convictions, and comparisons with earlier years are difficult to make. A dash appears in 1968 and 1979 rows where the data are not available.

^aSource: *Crime Statistics, Police*, Cat. 85–205, Statistics Canada.

^bSource: Bureau of Dangerous Drugs, Health Protection Branch, Health and Welfare Canada, and *Cannabis* (1972; 322–323). Discharges are included in convictions totals in this source.

would appear to be second in importance. However, we cannot be sure how many have their educational or job opportunities affected by cannabis use. Serious reactions requiring treatment or hospitalization do appear to be rare.

SUMMARY

Cannabis is the most important drug in Canada in terms of the number of users and recent trends in use. Although it is frequently grown in Canada, more frequently it is imported from a variety of South American and Middle Eastern countries. Its main immediate effects are to create euphoria and hilarity. However, growing evidence of long-term effects indicate that unpleasant physical and psychological reactions are common. Cannabis use began in Canada in the mid-1960s and increased enormously through the 1970s. There is evidence among both students and adults that use has stabilized in recent years. In Canada, use is associated with age and sex, use of other drugs and alcohol, and psychological problems. Use is most common among dropouts, various deviant groups, and students. The most common problems among Canadians seem to be mild adverse reactions and legal complications from arrest.

Heroin and Other Narcotic Drugs

Canada has had a narcotic drug problem for about a century, although the types of drugs involved and the size of the problem have varied greatly. It has been concern over narcotics that has determined much of the drug legislation in Canada and dictated what laws control the use of almost all other drugs. The image of the narcotic-addicted “dope fiend” has become the stereotype for all drug users and persists today in our ideas about pot smokers and glue sniffers.

The first Canadian narcotics problem was opium (see chapter 1). Later, however, in the 1930s and 1940s it had become prescription narcotics. The early 1950s saw the development of heroin addiction in British Columbia, which soon spread to most large cities. Current narcotics problems in Canada seem to be a mixture of both the old and new. Heroin still remains a problem, as do some of the prescription opiates and opiate-like drugs such as methadone, pethidine or meperidine (e.g., Demerol), and propoxyphene (e.g., Darvon).¹

THE NATURE OF OPIATES AND OTHER NARCOTICS

The term “narcotic” has many meanings. It has been applied to any drug which produces sleep or *narcosis* (literally, a numbing). Legally, it refers to any drug covered by “narcotics” legislation, which in Canada means opiates, cannabis and coca derivatives. Sometimes it seems to be used to refer to any drug which produces addiction and withdrawal symptoms on cessation of use.

¹ Note that drug names that are lower case are generic or non-proprietary names, whereas those that are capitalized are trade names.

Several categories have been suggested (e.g., Le Dain, 1972) to simplify usage. *Opiate narcotics* refer to drugs derived from the opium poppy plant. They include opium itself, which is a sticky fluid taken from the unripe pods of the opium poppy, as well as various other opiate alkaloids derived from opium, including morphine and codeine. Heroin and hydromorphone (Dilaudid) are *semisynthetic* drugs derived in part from opium. Wholly *synthetic* drugs with opiate-like features include methadone, pimidine (e.g., Alvodine), pethidine (e.g., Demerol), and propoxyphene (e.g., Darvon). Hundreds of other opiate alkaloids, semisynthetics, and synthetics have been created with similar features; however, these are the main opiate drugs of abuse in Canada. In this chapter, "narcotics" is used to refer to the opiate drugs, and not to other drugs included in "narcotics" legislation.

Opiates are used in various ways in medical practice. Morphine is often used as a sedative and painkiller, especially in postoperative care. Propoxyphene and pethidine are used primarily as painkillers. Methadone, originally developed as a painkiller, now is used mainly in the treatment of narcotic addicts; there is growing evidence, however, that methadone is also used illicitly and can be bought on the streets of many Canadian cities. Most of these drugs can be either injected or taken orally. Morphine and heroin, however, lose most of their effect unless injected. With the exception of heroin, most street opiates are found in oral forms.

In many parts of the developing world, but more rarely in Canada, both opium and opiates are self-administered or prescribed to treat diarrhea and coughs and other bronchial complaints. Heroin is no longer used in medical practice, although it was employed as an anesthetic in Canada up to the early 1950s. Heroin is the first choice of most street addicts in Canada, but frequently not readily available. It is almost always injected intravenously or subcutaneously, although rarely heroin powder may be sniffed or "snorted" by addicts.

Street samples of heroin vary enormously in potency and general quality. For example, seized samples analyzed for the Le Dain Commission (1973) ranged from 5.4 mg to 92.5 mg per typical dose in heroin content, with a mean of 33 mg. Many products indicative of incomplete synthesis were found in the samples, together with non-opiate drugs such as caffeine, methaqualone, MDA, and quinine. In one set of the samples, only 9 of 18 contained any heroin at all. Among 12 heroin samples analyzed by the Addiction Research Foundation in 1975-80, only two actually contained heroin. Clearly the content of street heroin is so unreliable as to make its purchase an expensive and risky business.

THE EFFECTS OF NARCOTICS

The effects of narcotics vary considerably according to the actual drug given, the dose, and the route of administration. In general, all of the opiates and other narcotics can induce sleep or at least stupor at high doses, and many such as morphine and heroin can do so at lower doses. The other major effect is their analgesic (painkilling) property. All narcotics relieve pain, and many are given only for that reason. Apparently, narcotics do not actually do away with pain; it is usually still felt, but the patient does not feel its unpleasant aspects or simply does not care about it.

Users of illicit narcotics such as heroin are, of course, seeking the "high" or "rush" obtained from intravenous injection. The main features are feelings of great euphoria, peacefulness, and contentment. They often enter a dreamy or sleepy state called "going on the nod." High doses may actually produce sleep. Users often describe their early experiences as a marvelous ecstasy. Much of the narcotic euphoria seems to occur early in the addict's career. Those who are truly addicted and tolerant to narcotics experience little euphoria and are taking the drugs to ward off withdrawal symptoms.

HARMFUL EFFECTS OF NARCOTICS

The best-known effect of narcotics is, of course, addiction marked by the development of tolerance and dependence (Eddy *et al.*, 1965). Tolerance occurs when the user requires a larger amount of drug to obtain the desired effect. Dependence occurs when the user experiences withdrawal symptoms if the drug is no longer being taken. How quickly addiction develops depends upon the drug being taken and the route of administration. Drugs which are injected—especially self-injected—such as heroin, create addiction more quickly than drugs taken orally.

Withdrawal from heroin among heavy daily users begins about 6 to 12 hours after the last dose and peaks within 48 to 72 hours. The classical withdrawal reaction is marked first by restlessness and yawning, and then sleeplessness, with alternating chills and hot flashes. Breathing is often irregular, and cramps are felt in the legs, back, and abdomen. Vomiting, diarrhea, and perspiration also appear, together with skin "goose bumps." Tremors are very common. All of the withdrawal symptoms are quickly ended by a dose of a narcotic, especially an intravenous dose. Frequently, street addicts do not have the full-blown withdrawal reaction, for the street drugs they are using are weak and adulterated.

As well as addiction, narcotics are responsible for many acute toxic reactions and death. Canadian addicts have very high death rates: it has

been estimated (Le Dain, 1973) that about 1.0% die each year. Addicts die more often from murder, suicide, and accidents, but they may also die from toxic reactions. For example, the Le Dain Commission reported 220 deaths from narcotics in 1969-70. The majority (119) were primarily due to heroin or morphine, with fewer due to methadone (30) and propoxyphene (47) or unspecified narcotics (27). Many of the fatalities involved several narcotics, or other drugs as well as narcotics.

The exact cause of death in narcotics-related cases cannot easily be determined. Many are due to overdoses resulting in respiratory failure. Such overdoses sometimes involve addicts who have been in prison or hospital and have had their tolerance to heroin greatly reduced. Other deaths have occurred in response to usually tolerated doses. These have been described as "shock-like" reactions (Helpern and Rho, 1966), with the needle still in the addict's vein. Speculations have been that such deaths are due to allergic reactions to the injection itself or to drug adulterants, but the explanations are not deemed satisfactory as yet.

Other than risk of addiction and of death as described above, chronic use of narcotics seems to be surprisingly safe. There are few signs of physiological damage attributable to the drugs themselves. Permanent brain damage and psychoses seem to be rare (Le Dain, 1973). Persistent constipation and sexual complications are often described by addicts. In addition, there are problems resulting from unsafe injection practices, such as hepatitis, collapsed veins, thromboses, and skin ulcers. However, there has been no serious disease attributable to chronic narcotic use that would parallel liver cirrhosis for alcohol abuse or lung cancer for tobacco smoking.

SOURCE AND AVAILABILITY OF ILLICIT NARCOTICS IN CANADA

Narcotic drugs are available both legally and illegally in Canada. Of the large amounts of opiates and other narcotics imported into Canada for medical and veterinary purposes, some reach the illegal market. All opiates and narcotics, except in the case of painkillers containing small amounts of codeine, require a doctor's prescription, which cannot be repeated or refilled. The drugs must be specially stored, and storage practices are subject to frequent review by officials of Health and Welfare Canada. Stocks of narcotics kept by hospitals, pharmacies, and other legal suppliers must be carefully monitored. Thefts or other disappearances must be reported. Excessive prescribing of narcotics by physicians will be noted by inspectors and explanations sought. A warning is issued if no adequate explanation is made. If it is not heeded, disciplinary action may be taken by medical societies. Criminal charges may, in rare cases, be laid for careless prescribing or poor record-keeping.

Methadone is currently prescribed mainly for the treatment of heroin addiction; it is used as a substitute for heroin for either long-term maintenance or gradual withdrawal. Special authorizations are given to physicians allowed to prescribe methadone. In 1982 there were 289 such authorizations (considerably down from 800 in 1972).² Street use of methadone does occur, however, and addicts in treatment sometimes sell their supplies. This practice was more common in the early 1970s, when methadone was frequently prescribed and far more physicians were authorized to prescribe it. Convictions involving methadone possession and trafficking reached a peak of 82 cases in 1971 but decreased gradually to only 2 in 1979 (Bureau of Dangerous Drugs, 1980).

Legally produced narcotics enter the black market by various means, principally thefts from warehouses, hospitals, and pharmacies or from doctors' offices, cars, or residences. In 1980 there were 1,314 thefts in Canada, almost all from pharmacies or hospitals. Some addicts steal prescription pads from doctors' offices and forge prescriptions for narcotics, but the exact numbers are not known. Currently, there are more convictions involving prescription narcotics than heroin.

Enterprising addicts will approach doctors with "an opiate-seeker's disease" (Jacob and Sellers, 1979) such as "Crohn's disease (a bladder disease), kidney stones, back injury, migraine or addiction." They typically ask for a specific narcotic, and will see several doctors in the hope of obtaining multiple prescriptions. They may then use the drugs themselves or sell them on the street. In 1980 Health and Welfare Canada and the Canadian Medical Association issued an explicit warning to Canadian physicians about the prescribing and overprescribing of narcotics to addicts and the risks of narcotics thefts.

Illicit narcotics come to Canada in several ways. For some reason, opium has never been cultivated on a large scale in Canada, although some of the isolated foothills of the Rockies might be ideal in both soil and climate. Small amounts of opium were cultivated in British Columbia during the Second World War when supplies from the Orient were disrupted (Le Dain, 1973); however, the product was weak and unsuitable. The fact that seizures of raw opium in Canada are typically few and of small size suggests that virtually no processing is done here. Nor has the illegal manufacture of synthetic and semisynthetic opiates ever been much of a problem.

² The 289 include some veterinarians, in whose practice methadone is used as a painkiller.

Heroin, the major opiate used illicitly, could be prescribed in Canada up to 1955. Since then it has never been imported or prescribed, although it is said that some hospitals still have heroin supplies. Heroin enters Canada from a variety of countries. Until the mid-1970s most heroin came from opium grown in the Middle East and refined in France or Italy. However, much of the "French Connection" has now been disrupted. Currently, supplies come mainly from the "Golden Triangle" area of Burma, Thailand, and Laos. Small amounts are thought to come from Mexico, the Middle East, and Pakistan and India. The large-scale commercial distribution seems to be from the Golden Triangle via Hong Kong into Vancouver. In addition, small amounts are imported by travelers from many other countries, especially England, the United States, Mexico, Pakistan, and countries in the Middle East. In the early 1960s there was no heroin trade worth mentioning outside Vancouver, Montreal, Toronto, and Winnipeg. However, the intervening years have seen heroin become at least sporadically available in virtually all Canadian cities, even those in the Maritimes which formerly had no supply at all.

EXTENT OF HEROIN AND OPIATE USE IN THE GENERAL POPULATION

Typically, very few people in the general population have ever tried heroin or other illicit opiates. In fact, heroin use is so rare that it is often left out of drug use surveys. Table 4 shows data from a few Canadian studies. The adult survey in Durham Region of Ontario ($n = 993$) found no users within the previous year and only seven who had ever used it. The study of teenagers in the same area ($n = 293$) also found no recent users and only one who had ever used it.

Heroin use is infrequently reported in most student populations. The surveys in Ontario schools found 1.9% had used in 1977, 2.3% in 1979, and 1.5% in 1981. However, reported use was somewhat higher among native Indian students (4.3%). The earliest survey data seem to be from Vancouver—in 1970, 1.7% reported ever having used it, and in 1974, 1.3%. The 1970 survey also showed that 18% of students in Vancouver and 10% outside of Vancouver had been offered heroin.

Such use as does occur among students does not suggest that addiction is common (table 4). Most student users in Ontario reported using it infrequently (10 times or less). Of course, since frequent or daily use would likely be incompatible with continuing school attendance, frequent users would not appear in the student samples.

Some surveys have inquired about illicit "opiate" (unspecified) use among students, but differences in the types of questions asked make

TABLE 4

*Studies of Heroin and Other Opiate Use
in Various Canadian Populations*

Author	Type of population	Rate of use
<i>HEROIN</i>		
Russell & Hollander (1974)	students (grades 9–12) in Vancouver (n = 2,496) 1970 (n = 1,732) 1974	1.7% ever used 1970 1.3% ever used 1974
Smart <i>et al.</i> (1978)	household sample in Durham, Ontario, 18 and over (n = 993)	0.7% ever used 0.0% used in last 12 mths 0.0% used in last mth
Liban & Smart (1980)	Indian students (grades 7–13) in Ontario (n = 71) 1979	4.3% used in past 12 mths
Smart & Blair (1980)	household sample in Durham, Ontario, teenagers 14–18 (n = 292)	0.3% ever used 0.0% used in past 12 mths 0.0% used in past mth
Smart <i>et al.</i> (1981a)	students (grades 7–13) in Ontario (n = 4,687) 1977 (n = 4,794) 1979 (n = 3,270) 1981 users only, 1981 (n = 49)	1.9% used in past 12 mths 1977 2.3% used in past 12 mths 1979 1.5% used in past 12 mths 1981 8.3% used 40+ times in past yr 11.0% used 20–39 times in past yr 4.1% used 10–19 times in past yr 4.5% used 6–9 times in past yr 7.2% used 3–4 times in past yr 64.9% used 1–2 times in past yr
<i>OTHER OPIATES</i>		
Whitehead (1969)	students in Halifax (n = 1,604) 1969	1.6% used in past 6 mths overall 2.0% used in past 6 mths male 1.3% used in past 6 mths female
Kim (1970)	young prison inmates	7.0% used before arrest
Love & Killorn (1973)	students in Charlottetown (n = 1,709) 1972	0.8% used in past 6 mths

TABLE 4 (continued)

Author	Type of population	Rate of use
Annis & Watson (1975)	students (grade 9) in Timmins, Ontario (n = 88) dropouts (n = 827) non-dropouts	6.0% initial interview dropouts 7.0% follow-up dropouts 1.0% initial interview non-dropouts 2.0% follow-up non-dropouts
Bakal <i>et al.</i> (1975)	students in rural Alberta (n = 8,967) 1971 (n = 7,704) 1974	3.7% ever used 1971 sample 3.6% ever used 1974 sample
Smart & Fejer (1975)	students (grades 7, 9, 11, and 13) in Toronto	1.9% used in past 6 mths 1968 4.0% used in past 6 mths 1970 4.0% used in past 6 mths 1972 3.6% used in past 6 mths 1974
Smart & Liban (1978)	household sample in Durham, Ontario, 18 and over (n = 993)	1.7% ever used opium 2.2% ever used other opiates 0.2% used in last 12 mths opium 0.6% used in last 12 mths other opiates 0.1% used in last mth opium 0.1% used in last mth other opiates
Erickson (1980)	cannabis criminals (n = 85) 1974	41.0% ever used smoking or sniffing 7.0% ever used injection
Smart & Blair (1980)	household sample in Durham, Ontario, teenagers 14-18 yrs	3.1% ever used opium 4.8% ever used other opiates 2.1% used in past 12 mths opium 3.8% used in past 12 mths other opiates 0.0% used in past mth opium 0.6% used in past mth other opiates
Smart <i>et al.</i> (1981a)	household sample in Durham, Ontario, non- students 14-25 (n = 173)	3.5% ever used

comparisons difficult. In general, rates of "opiate" use are two or three times as high as for heroin use alone (table 4). Somewhere between 2% and 6% of young people report having used opiates during their lifetime. Rates are especially high among school dropouts and those convicted of cannabis possession (of the latter, 41% had at some time used and 7% had injected opiates).

In general, studies of heroin users in school surveys show a peak for use in grade 9. Rates are somewhat higher among males than females (2.0% vs. 0.8% in the Ontario 1981 study). However, with so few high school users found, it is difficult to be sure of their characteristics. Their grades seem to be lower, and dropout rates seem to be higher. There is also some doubt about the validity of students' responses to questions about heroin use.

NARCOTIC ADDICTS AND USERS IN CANADA: TRENDS AND SOME RECENT HISTORY

Because surveys of general populations are of little help in studying narcotics use, we must rely on other types of statistics. These have usually been statistics on "known users" of narcotics and conviction rates for various narcotics offenses, as well as special studies of user populations. Statistics for the first two are gathered each year and hence can be used to study trends. Statistics on convictions have been kept since 1909 and on "known users" since 1955.

The Bureau of Dangerous Drugs reports on "known users." There are three categories—illicit users of street drugs; licit users of medically prescribed drugs for long-term physical disorders; and professional users, who are members of medical and allied professions who illicitly use drugs from legal supplies. Names are gathered for the index from the records of the courts and police, treatment centres, and pharmacists. Before 1980, the names were retained in the illicit-user file for 10 years and in the other two files for five years, or until death or deportation. However, starting in 1980, names are retained for five years in all three files; hence data before and after 1980 cannot be compared precisely, although relationships among variables (e.g., age and sex of users) are still worth examining, if cautiously. The files include people who are known to be addicts, those who are only users, and probably some who are no longer users. The numbers of "known users" should be used as a general index of the problem rather than an exact count of addicts in Canada.

Table 5 shows the numbers of cases in each group reported from 1966 to 1980. It can be seen that there were 18,800 cases in 1979, the latest year for which we have consistent data. This number is probably much lower than the real number of narcotics users. Several methods

TABLE 5

*Illicit Narcotics Users Known to
the Bureau of Dangerous Drugs*

Year	Total	Yearly change	Users under 20 yrs of age	Users under 20 as % of total
1966	3,182	—	15	0.4
1967	3,335	153	25	
1968	3,459	124	12	
1969	3,733	274	23	
1970	4,655	922	194	
1971	6,425	1770	401	
1972	8,958	2533	682	7.6
1973	10,250	1292	709	
1974	12,194	1944	713	
1975	13,927	1733	724	
1976	15,264	1337	826	
1977	17,242	1978	862	
1978	18,389	1147	600	
1979	18,800	411	345	0.2
1980	13,061			

Note: The "total" numbers are cumulative and do not represent different cases each year. Starting with 1980 there was a change in the definition. Users were reported prior to 1979 if they were active at any time in the past 10 years; as of 1980 they were reported only if active in the past five years.

Source: *Drug Users and Conviction Statistics*, Bureau of Dangerous Drugs, Health and Welfare Canada.

(Smart, 1977) have been used to show that the estimates are 40% to 50% below what they should be. For example, the Le Dain Commission found that only half of the people who died from narcotics overdose were listed in the index. The real number for 1979 then could be as high as 38,000. In addition, there are many more cases (50,000 estimated by Le Dain) of people who are heavy narcotics users but have not got into any trouble yet.

Nonetheless, if we take the "known users" solely as an index, we can look at trends over time. There were only 3,182 cases in 1966 but there was a sixfold increase to the 18,800 of 1979. Much of that increase appears because cases are kept in the index so long. The numbers of cases added to the index each year was relatively small in the late 1960s and highest in the early and mid-1970s. Since 1977, the number of new cases added has been declining greatly: by 1979 it was down to the level of the late 1960s.

Data on young (under 20 years) index cases are also interesting. They represented only 0.4% of all cases in 1966 but increased to 7.6% by 1972, only to decline to a very low figure (0.2%) by 1979. There are now far fewer young narcotic addicts than there were in the early 1970s.

The same trends can be seen if heroin and methadone conviction data are examined (table 6). Incidentally, those convicted and "known users" are sometimes the same cases, but not always, for the number of convictions per year is usually much different from the number of new cases indexed. It can be seen that the rate of convictions was low in the late 1960s and showed no large upward trend. Heroin convictions increased greatly in the early 1970s such that in 1973 there were about five times as many as in 1966. The trend was downward after 1973; by 1980 the level was lower than in 1968. Much of the same trend is obvious for both heroin and methadone convictions, with both showing a low and declining level in the late 1970s. The same relationships over time can be seen in the RCMP records of heroin seizures—low levels in the late 1960s and late 1970s, but a peak in the early 1970s.

Since data were first kept, the majority of cases of known addicts have been street addicts rather than licit users or professional users. In fact, the proportion of street addicts increased from 80% in 1956 to about 90% in 1969 and 97% in 1973. Nevertheless, as the following sample figures show, there are indications of new problems with licit users and professional users. The number in parentheses is the rate per 100,000 population aged 15 and over.

	1956	1966	1969	1973	1980
Illicit	2,678 (25)	3,182 (24)	3,733 (26)	10,250 (64)	13,061 (71)
Licit	352 (3)	259 (2)	178 (1)	150 (1)	708 (3.8)
Professional	211 (2)	151 (1)	149 (1)	114 (1)	214 (1.2)

TABLE 6

*Narcotic Control Act Convictions for
Heroin and Methadone, 1965-1980*

Year	Heroin	Methadone
1965	266	6
1966	221	3
1967	348	19
1968	279	23
1969	310	15
1970	383	14
1971	502	82
1972	923	81
1973	1,290	43
1974	798	24
1975	511	26
1976	708	14
1977	600	16
1978	544	5
1979	401	2
1980	223	3

Note: With the 1980 report, the Bureau of Dangerous Drugs considerably revised the conviction figures for 1976-80 compared to those earlier reported.

Source: *Drug Users and Conviction Statistics*, Bureau of Dangerous Drugs, Health and Welfare Canada.

There are a variety of other trends which can be discerned in the data. The major ones include the following:

- Heroin has always been the drug most used by “known users”—about 88 % of users are involved with heroin. The greatest recent growth has been in their use of synthetic narcotics: from 1 % in 1956 to 7 % in 1973. Their use of opiates other than heroin (i.e., morphine, codeine) has shown a parallel decline: from 9 % to 2 %.
- About two-thirds of known illicit users were at one time found in British Columbia, and there was little change in this proportion between 1956 and 1973. However, by 1980 only about 35 % were in British Columbia. The growth has been greatest in the Maritime provinces, Alberta, and Saskatchewan. In the latter two, known illicit users grew by a factor of 20 or more. The Maritimes had no known illicit users in 1956, but 69 by 1973 and 530 by 1980. Growth has been slow in Ontario and Quebec for known illicit users.
- There have been large changes in the proportion of females among known users. They represented about 37 % of cases in 1956, 26 % in 1973, and only 21 % by 1980.
- The most dramatic increase in known users has been in the 20-to-24-year age group. They were about 10 % of cases in 1956, but more than a third by 1973. However, in 1980 they were only 22 % of cases.

CHARACTERISTICS OF NARCOTICS USERS AND ADDICTS

Probably because narcotic addiction has not been a large problem in Canada, there have been only a few studies of addicts. Most of these have come from British Columbia or Ontario, and almost all have been based upon addicts in treatment or in prison. These are likely biased samples of addicts, and we are not sure how they are different from the total population of addicts in Canada. In this connection, it should be remembered that only half of those dying from narcotics overdose had been indexed as “known users.” That is, probably only half had been convicted or were in treatment, since “known users” files are mostly assembled from such data. The few special studies (other than surveys) of narcotics users not in treatment are thus worth examining. However, most of what we know comes from treated or convicted users. The most commonly studied characteristics are demographics (age and sex), socioeconomic status, criminality, and psychological status.

The average age of many addict groups was decreasing in the 1970s, although it seems to be increasing now. Considerable growth in

the 20 to 24 age group was seen in the Bureau of Dangerous Drugs (BDD) data for the 1970s (but declining in the late 1970s). Also, starting in 1971, younger addicts were seen in the treatment population of a methadone clinic in Toronto (Everson and Segal, 1975): the average age of new applicants was 22 in 1971, whereas earlier it had been 35. Both the older and younger groups had begun using heroin in their late adolescence or early 20s. Early studies in British Columbia showed about the same ages for beginning heroin use and dependence (Stevenson *et al.*, 1956; Henderson, 1970). The time lag between becoming dependent and seeking treatment has decreased in several Canadian populations. This trend may be due to the greater availability of treatment or to legal pressures.

Sex ratios among heroin addicts vary from one study to another, but there is normally a preponderance of males. The ratios in school surveys in both Vancouver and Toronto are about even for all users, but there are slightly more males among the heavy users. Addicts treated in British Columbia in the early 1960s were mainly (74%) males (Richman and Humphrey, 1969). However, of those treated in Toronto in 1970, 55% were males (Smart *et al.*, 1977). The ratio of male to female users among known illicit users in the BDD files has changed greatly since 1956—from about 2:1 to 5:1.

The socioeconomic status of Canadian narcotic addicts is surprisingly good. We are aware that in some countries, especially the United States, narcotic addicts are drawn mainly from the ghettos of large cities and from dispossessed racial minorities. This is not the situation among Canadian addicts. Almost all are white. There are a very few Chinese and native Indian addicts in British Columbia, but fewer than would be expected in proportion to the numbers of these groups in the population. There are also some young Italian addicts in Toronto. Addicts in Canada are not typically the products of ghettos. Stevenson's study of addicts in British Columbia showed that most came from financially comfortable homes and very few from poverty-stricken backgrounds. The occupational distribution of their families was the same as in the general population. Some studies have shown (Henderson, 1970) that addicts more often come from homes in which there was divorce, separation, or early death of parents.

There is no doubt that addicts develop socioeconomic troubles during their addiction. Most only have a grade 10 or 11 education (Stevenson *et al.*, 1956; Krakowski and Smart, 1972, 1974) and by the time they come for treatment many (about half) are unemployed and others have very intermittent work careers.

It can be no surprise that criminality and addiction to narcotics are related. The high costs of drugs and the constant association with

criminal elements to obtain them almost forces a relationship. Studies in a variety of populations in Toronto and Vancouver show that about half of the addicts were involved in crime before their addiction and about three-quarters were delinquents. However, the criminal involvement is often minor and limited to theft or prostitution (Le Dain, 1973). There has been a recent tendency (Everson and Segal, 1975) for young addicts admitted to treatment in Toronto to have no criminal career.

Psychological studies of addicts are typically conducted after they have been addicted for some time. We frequently do not know whether their problems led to or followed addiction. Several studies (e.g., Krakowski and Smart, 1972) have shown that addicts in treatment show signs of psychopathy—that is to say, a tendency to have low standards of conduct, to be unreliable, to show no guilt feelings about misdeeds, and to engage easily in criminality. However, they are normal in all other psychological traits. A study by Gendreau and Gendreau (1970) matched heroin addicts with another group on age, sex, socioeconomic background, criminality, and exposure to drugs. They found no differences between the groups in psychological characteristics and hence concluded that there was no “addiction-prone” personality. Stevenson *et al.* reached essentially the same conclusion: that “addicts are basically healthy people” and without serious psychopathology. They lack psychological resources, take risks, and utilize poor judgment, however.

ADDICTS AND USERS NOT IN TREATMENT OR PRISON

Only two studies of Canadian heroin addicts not in treatment have been found, and they unfortunately shed little light on the characteristics of users. Stephenson and Pollay (1977) found that 15% of adolescents assessed for child and family welfare agencies in Vancouver had used heroin. A follow-up inquiry of social workers in the same agencies found that 6% of their clients had used heroin, almost all of them girls and many of them native Indian or part-Indian. Virtually all had extensive histories of delinquencies and multiple placements in foster homes. (It is difficult to know why the sample included only girls when all other evidence suggests that boys should be more numerous.)

Delgaty (1976) made a participant observation study of heroin users and addicts in Niagara Falls, Ontario. Most were young and had been former users of speed (injectable stimulants). Most were addicted during the good weather only. As winter approached they stopped heroin use, left the street, and found jobs or applied for unemployment. They expected to return in the summer, but there was no follow-up to see whether they did or not. This study does show the drug-using background of young addicts and illustrates that many can give up addiction, at least temporarily.

DRUG ADDICTION AMONG PHYSICIANS

Addiction to drugs has long been recognized as a problem among those who handle drugs in their work, especially physicians, dentists, nurses, and pharmacists (Bloomquist, 1958). As stated earlier, special records are kept for professional addicts in Canada. Recently an interesting study, believed to be the first of its type, examined drug use among Quebec physicians. Wallot and Lambert (1982) obtained data on 37 Quebec physicians known to be "active addicts" in 1974-78. The rate of addiction was very high compared to other occupational groups—1.8 per 1,000. The typical physician addict was male and a general practitioner. Physician addicts often suffered from "pain, fatigue, overwork, and financial and marital difficulties." Meperidine or pethidine was used by 56% and morphine by 38%. About a quarter were also alcoholics. Within a few years about half seemed to improve, but the remainder were unchanged or worse. A number lost their licenses. The group in general had a high rate of geographic movement. Depression was the most commonly diagnosed psychiatric problem. Of course, addiction among professionals can be extremely difficult to treat, as they are using stronger and purer drugs than the average street addict and their physical dependence would be correspondingly more severe. We seem to have no comparable studies of drug addiction among other professionals in Canada such as nurses and pharmacists, but they would be a worthwhile addition to our knowledge. Also, we do not seem to have any data on how many street addicts are maintained illegally by addicted physicians.

WHY DO PEOPLE BECOME NARCOTIC ADDICTS?

By now it must be obvious that we have no very good answer to the question why people become addicts. Many theories of addiction are developed in the United States and assume that addicts have big-city ghetto backgrounds which create social and cultural forces promoting addiction. Such theories are unhelpful in Canada, as are theories based on psychopathology. Peer-group influences and availability seem most important. The sheer chance of being able to find narcotics varies greatly in Canada. A person could be raised in Vancouver or Toronto, where they are often available, or in a small city or town which has never seen them. Those who become narcotic addicts have left school early and spend an inordinate amount of time on the streets and hence in places where narcotics may be available. Stevenson *et al.* (1956) found that the only factor differentiating addicts from their non-addict siblings was that the addicts had long, close, and friendly relations with other opiate users.

A good theory of motivation for narcotic addiction in Canada has

still to be developed. It will be necessary, however, to explain the low level of addiction and how peer pressures, availability, and the addicts' own characteristics interact.

WHAT EXPLAINS THE HIGH RATE OF NARCOTICS ABUSE IN BRITISH COLUMBIA?

One of the anomalies of the drug abuse situation in Canada has always been the high rate of narcotics abuse in British Columbia. The tradition of heavy narcotics use has been a long one in B.C., stretching back to opium smoking among the Chinese in the 1800s. In 1973 (a peak year) there were 6,271 known illicit users in B.C., giving a rate of 369 per 100,000 population 15 years and over (Rootman and Richman, 1975). The other provinces had a rate of only 28 per 100,000. For several generations B.C. has had a rate of addiction some 15 to 20 times as high as the rest of Canada. This difference is reflected in rates of convictions, seizures of narcotics, and narcotics-related deaths. For example, in 1973 there were 38 narcotics-related deaths there compared to only 14 in the remainder of the country. However, the rate of "known users" in the licit-user and professional-user categories is no higher in B.C. than in other provinces.

Attempts to explain the anomaly are rare. Only Stevenson *et al.* (1956) seem to have made any serious effort. They put the emphasis on historical traditions and on the high rate of social and family disruption in B.C. It is worth examining a number of possibilities, as Stevenson *et al.* did, to see what factors are most important. The possibilities are (1) immigration of addicts into B.C. from other parts of Canada, (2) the tradition of narcotics use and the high availability of drugs—that is, a tendency to have a high level of drug use in general, and (3) a high level of social instability fostering deviance of all sorts.

It is unlikely that B.C. has a major narcotics problem because of other addicts' migrating there to use drugs. Several studies have shown that almost all addicts who live in B.C. were born there or migrated there very early. For example, Richman (1966) studied a group of clinic addicts and found that most were born in B.C. Of those born outside of B.C., most (68 of 81) claimed that they had begun using drugs after moving to the province. Richman and Humphrey (1969) found that only 44 of 177 addicts came to B.C. after the age of 18. More recently, Davis (1980) showed that in a sample of 529 known addicts in Vancouver, 75% had been convicted of a narcotics offense, but only 11% before they came to B.C. Although a few people seem to migrate to B.C. to pursue their drug careers, they are not nearly enough to explain the high rate of narcotics abuse.

The tradition of opium use is said to have created a "B.C. milieu" conducive to drug use. There is no doubt about the early use of opium among the Chinese in B.C. However, when that ended in the 1930s, the tradition was completely broken. Currently, there are very few Chinese addicts in B.C. (Stevenson *et al.*, 1956; Le Dain, 1973), and no evidence of any connection between their addiction and the earlier practice. During the 1930s and 1940s illicit drug use was no higher in B.C. than elsewhere. In fact, during the 1930s, Montreal and Toronto were the centres of drug addiction in Canada and had the highest rates of conviction (Stevenson *et al.*, 1956).

Probably the availability of narcotics is greater on the streets of Vancouver than elsewhere merely because of the numbers of addicts and the closeness to trade routes from Asia. However, availability was not always greater. In fact, during the 1940s and 1950s, narcotics were imported mostly through Montreal and Toronto and transported all the way to Vancouver for sale.

As pointed out by Stevenson *et al.*, B.C. has high rates of alcoholism and per capita alcohol consumption (though lower than the Yukon and Northwest Territories), of delinquency and serious crime, of mental hospital admissions, of divorce, of venereal disease, and of suicide. It seems, therefore, that there is a high level of social and family maladjustment and an unusual level of psychological problems in B.C. More recent surveys also show higher rates of cannabis use among B.C. young people (see chapter 2). Probably escapist activities such as use of narcotics and other drugs are more required in B.C. to cope with the greater social and personal problems. Because of the higher level of crime generally, narcotic drugs are less likely to be avoided for moral reasons. Stevenson *et al.* claimed that in B.C. there was an "intangible atmosphere of adventure, variety, experimentation, change coupled with the highest incidence in Canada of a number of unfavorable social and cultural factors" including alcoholism and crime. Evidence for the importance of the cultural tradition seems weak, as does evidence for the high level of experimentation. The most important factors are almost certainly the high level of crime and of social and family disruption. There are signs, however, that the near-exclusive hold of B.C. on heroin addiction has weakened greatly. The 1970s saw the development of heroin use in almost all large Canadian cities.

SUMMARY

Canada has had a narcotic drug problem for some time. The first narcotic used was opium, followed by heroin and the synthetic narcotics. All narcotic drugs relieve pain and in larger doses produce anaesthesia. The most popular narcotics among illicit users are heroin

and methadone, although other synthetic opiates are increasing in importance. All narcotics create problems of tolerance and dependence, and those that are injected cause other problems associated with needle use. Current trends show large reductions in convictions for narcotics offenses and in numbers of known users. Addicts are more often male, resident in large cities, and having high rates of criminality and unemployment. However, several studies show that they are not much different in personality or family background from non-addicts, except that they had friends who were addicts. More Canadian addicts live in British Columbia than elsewhere; the rate of addiction there is probably related to the high rate of crime and of social and family disruption.

Stimulants: Amphetamines and Methamphetamine

The category of stimulants represents a large number of drugs which have arousing or exciting effects. The reactions they provoke are not much different from those created by emergencies or stress. Amphetamines are synthetic drugs first developed in the late 1800s. They were used sparingly on prescription until the Second World War, when many soldiers were given them to counteract fatigue and increase alertness. Since the war they have been extensively used as general pick-me-ups, as an aid to students, truck drivers, and others who need to stay awake for long periods of time, as “diet” pills to reduce hunger, and as an aid to athletic performance. A new use for them began in the 1960s, when they were tried by young people for fun and for the peculiar high they produce when injected. More recently, some—for example, methylphenidate (e.g., Ritalin)—have been used to treat minimal brain dysfunction in adolescents and hyperactivity in children.

The amphetamine and amphetamine-like drugs which have been important in Canada include amphetamine (e.g., Benzedrine), dextro-amphetamine (e.g., Dexedrine), methylphenidate (e.g., Ritalin), diethylpropion (e.g., Tenuate), phenmetrazine (e.g., Preludin), and methamphetamine (e.g., Methedrine). Currently, methamphetamine and phenmetrazine are no longer available in Canada on prescription, but they still appear on the street. The prescribing of amphetamines was severely limited in 1972 to their use in certain rare medical conditions, such as narcolepsy, minimal brain dysfunction, epilepsy, hyperactivity and hypotensive states associated with anesthesia. Epidemics of intravenous amphetamine use have been described in Japan, Canada, the United States, and England.

Illicit use of stimulants in Canada has almost always involved injectable methamphetamine, known as “speed.” Seizures of illicit amphetamines in Canada have always been small in size and number compared to seizures of methamphetamine. For example, in 1973, a peak year for speed use, a total of 52.1 lb of methamphetamine were

seized, compared to 1.5 lb of amphetamines. Also, convictions for methamphetamine offenses have been many times as high as for amphetamines. For that reason, we will concentrate here on methamphetamine as the "problem" stimulant.

SOURCE AND AVAILABILITY OF ILLICIT STIMULANTS

Neither amphetamines nor methamphetamine are legally manufactured from basic chemicals in Canada, although imported forms are made into various drugs, combination drugs, and dosage forms. The legal importation of amphetamines and methamphetamine was at a very high level in the early 1970s but has been drastically reduced since. For example, 757 kg of amphetamines were imported in 1970 but only 9 kg in 1979 (Smith, 1981b).

The diversion of legal amphetamines to the illicit market has been found to be the main source for street use in the United States. It was estimated there that 30 % to 50 % of the legal production reached the illicit market in the 1970s (Sadusk, 1966). The Le Dain Commission showed in 1973 that actual sales of amphetamines were only half of the amount known to be manufactured for Canada. Some of the remainder was held in storage; however, vast opportunities for diversion existed when stocks were so high. Indeed, some very large seizures of amphetamines took place in the early 1970s—for example, as many as 54,000 Preludin and 12,000 Dexedrine tablets (Le Dain, 1973). Since importation and stocks have been greatly reduced, opportunities for diversion must now be minimal in Canada.

Methamphetamine was never legally imported into Canada in large amounts; by 1976 only about 0.1 kg was legally imported. The main source for speed has always been illicit laboratories, many of them in the Toronto area (Le Dain, 1973). The number of laboratories operating and the amount of speed produced are difficult to determine. However, seizures of methamphetamine have been at a low level for several years (only 5.8 lb in 1976–77) after reaching a high in the mid-1970s (119.3 lb in 1974–75).

Street samples of stimulant drugs are often not what they are purported to be. Marshman and Gibbins (1970) studied street methamphetamine in Toronto and found that only 61.4 % of the samples contained any of the drug; often the amount was far below that stated, even in the good samples. The Le Dain Commission studies (1973) found in a nationwide survey that only 73 % of samples sold as methamphetamine contained the drug.

EFFECTS OF AMPHETAMINES

The effects of all amphetamines and other stimulants are approximately the same, although the dosages and routes of administration make an enormous difference. In particular, the effects of moderate doses taken orally are very different from the effects of high doses injected intravenously.

In a moderate oral dose (up to 30 mg), amphetamines have an excitatory effect on the central nervous system, plus adrenalin-like effects such as increased heart, blood-pressure, and respiration rates, widening of pupils of the eyes, and depression of appetite. The user feels active, alert, and energetic. There may be a feeling of better concentration and clearer thinking. Fatigue is lifted. Many users will be more talkative and socially oriented. In some people, moderate doses produce irritation, confusion, inability to concentrate, dizziness, headache, or nausea. After repeated moderate doses, withdrawal reactions may occur and be marked by fatigue and despondency (Kalant and Kalant, 1974).

The effects characteristic of a high dose normally result from injection of methamphetamine or from the "snorting" of the crystalline form. Actual street doses used are difficult to determine, given the impurity of the drug, but some users claim they take several hundred milligrams per day. Intravenous amphetamines give an immediate "rush" or "flash" of pleasurable euphoric experience.

Speed users will start a "run" or "flash," which they maintain over several days with a series of injections; the "run" is then followed by a "crash" or coming-down when no drugs are used. Users on a "run" usually feel happy, confident, and energetic but appear to outsiders as overactive, garrulous, and boastful. High-dose methamphetamine use may prevent sleep for several days, during which users rush about accomplishing both demanding and worthless tasks. Users often engage in repetitive behavior without realizing it—for example, dashing out to buy cigarettes, passing the store in a rush, and going around the block several times before finding it. Hunger is blocked and little or no eating takes place. Other toxic symptoms may include jerky repetitive movements, irritability, self-consciousness, fear, hallucinations, tingling, itching, and paranoid delusions which increase in severity over the course of the "run." Aggressive and violent acts are likely at this time, and a number of speed users have killed and been killed because of their paranoia.

As the "run" ends, the unpleasant symptoms predominate and the user stops taking amphetamines. During the "crash," users may sleep for several days at a time. When they awaken they are often depressed, sleepy, and extremely hungry.

HARMFUL CHRONIC EFFECTS OF AMPHETAMINES

Some of the worst toxic effects of amphetamines have already been mentioned. However, there are a number of chronic effects which are especially important—among them addiction and dependency, physical problems, psychosis, and proneness to violence.

Tolerance to the effects of amphetamines appears to occur at different times. Those who (before they were restricted) took them for diet control usually needed to increase the dose to maintain the anorectic effect, particularly those who were taking more than the prescribed dose. Also, tolerance to the intravenous “rush” seems to be rapid. Those taking the drug for narcolepsy show little need to increase the dose (Le Dain, 1973), probably because they are not dosing themselves but taking the drugs on a prescribed regimen.

Addiction to amphetamines has often been described—especially to speed or other injectable amphetamine forms. Withdrawal symptoms include severe fatigue and psychological depression. Physical dependence on low or moderate doses seems to be rare, but craving and other aspects of psychological dependence do occur.

Of the numerous physical problems seen in speed users, it is not always possible to be sure which are due to the drug, the method of injection, or the lifestyle. Like heroin addicts, speed users often show the physical consequences of frequent or unsanitary injection procedures: for example, collapsed veins, ulcers, hepatitis, tetanus, and toxic reactions from impurities in street drugs. Either high doses or the lifestyle or both may lead to dehydration, malnutrition, weight loss, infections, and a variety of liver and cardiovascular diseases.

The amphetamine psychosis seems very similar to paranoid schizophrenia, with delusions of persecution, thought disorders, and hallucinations. While the frequency of true paranoid psychosis in speed users is unknown, it seems to be higher than for any other illicit drug except perhaps cocaine. However, the Le Dain Commission (1973) found that fewer than 1% of first admissions to psychiatric institutions in Canada involved amphetamines and concluded that “amphetamines are not presently a causal factor in a significant proportion of psychiatric hospital admissions in Canada.”

DOES “SPEED KILL” OR DO “SPEED FREAKS” KILL?

One of the catchwords of the drug craze of the early 1970s was

"Speed kills," but few attempted to explain what it meant beyond the idea that chronic speed use was a very dangerous practice. Speed users themselves often expected to be dead in a few years' time. One supplier of speed offered to sell the bodies of his customers for scientific purposes to the Addiction Research Foundation on the assumption that they would soon be dead. In actual fact, however, deaths from the toxic effects of amphetamines themselves have always been rare. Mortality rates for speed users were not known in the early 1970s to be higher than for comparable age and sex groups of non-users (Cox and Smart, 1972). Most of the harmful effects of speed would not limit the lives of users in any significant way. Nonetheless, misleading as the phrase "speed kills" seems to be, it may have had a very positive effect in discouraging young people from trying amphetamines in any form.

The best study of amphetmamine-related deaths was done by Kalant and Kalant (1976). They reviewed published case reports and coroners' records in Ontario for 1972-73, the peak years of the speed epidemic. The world literature up to 1974 contained only 47 cases of amphetamine death: 10 poisonings of uncertain mechanism, 7 cerebrovascular accidents, 6 cardiac deaths, 2 deaths by violence, and the remainder of unclear etiology. However, in Ontario during 1972-73 there were 26 amphetamine-related deaths, "of which 16 were due to accident, suicide or homicide"; two were cardiac deaths, two hepatic, and the rest due to mixed-drug overdoses. The mortality rate for speed users was estimated to be four times as high as expected. However, the major causes were related to violence rather than toxic effects, the single most common cause being suicide. There were no data on how many of the homicides or accidents were caused by other speed users. In view of the group nature of speed taking and the need for users to associate with each other for drug supplies, many of the deaths of speed users were probably attributable to other users.

THE EXTENT OF STIMULANT USE IN GENERAL POPULATIONS

There are fewer estimates of speed use than of other stimulant use for Canadian populations. Table 7 shows the data for several studies. Rates of use were about 3.5% to 4.5% among students in the early 1970s. Rates reached a peak for Ontario students in 1970 (4.5% used) and declined in 1972 and 1974 (3.3% and 2.7% respectively). The Le Dain Commission's national studies in the early 1970s indicated that 3% of high school students and fewer than 1% of college and university students used speed. A similar trend is obvious among rural Alberta students, with a decline between 1971 and 1974. The Ontario school studies show essentially no change in speed use in the years 1977-81. It seems as if the peak for speed use among students in Canada as a whole was 1970.

TABLE 7

*Studies of Speed and Other Stimulant Use
in Various Canadian Populations*

Author	Type of population	Rate of use
<i>SPEED</i>		
Bilodeau (1971)	secondary and CEGEP students in Montreal (n = 7,419) 1971	11.0% used in past 6 mths 2.5% used 7+ times in past 6 mths 1.0% used 5-6 times in past 6 mths 1.8% used 3-4 times in past 6 mths 6.1% used 1-2 times in past 6 mths
Russell & Hollander (1974)	students (grades 9-12) in Vancouver (n = 1,732) 1974	3.5% ever used 0.1% used 50+ times in past 6 mths 0.3% used 3-6 times in past 6 mths 1.2% used 1-2 times in past 6 mths
Bakal <i>et al.</i> (1975)	students in rural Alberta (n = 8,967) 1971 (n = 7,704) 1974	3.0% ever used 1971 2.3% ever used 1974
Smart & Fejer (1975)	students (grades 7, 9, 11, 13) in Toronto (n = 6,890) 1970 (n = 6,641) 1972 (n = 3,479) 1974	4.5% used in past 6 mths 1970 3.3% used in past 6 mths 1972 2.7% used in past 6 mths 1974
Erickson (1980)	cannabis criminals (n = 85) 1974	28.0% ever injected amphetamines 3.0% used 1+ times per mth in past 6 mths 4.0% used < 1 time per mth in past 6 mths
Liban & Smart (1980)	Indian students (grades 7-13) in Ontario (n = 71) 1979	4.2% used in past 12 mths
Smart <i>et al.</i> (1981a)	students (grades 7-13) in Ontario (n = 4,687) 1977 (n = 4,794) 1979 (n = 3,270) 1981	2.7% used in past 12 mths 1977 3.6% used in past 12 mths 1979 3.0% used in past 12 mths 1981
Smart <i>et al.</i> (1979)	(n = 4,794) 1979	0.1% used 40+ times in 12 mths 0.2% used 20-39 times in past 12 mths

TABLE 7 (continued)

Author	Type of population	Rate of use
Smart <i>et al.</i> (1979)	(n = 4,794) 1979	0.2% used 10–19 times in past 12 mths 0.1% used 6–9 times in past 12 mths 0.5% used 3–5 times in past 12 mths 2.4% used 1–2 times in past 12 mths
Smart <i>et al.</i> (1981a)	users only, 1981 (n = 98)	6.8% used 40+ times in past 12 mths users 3.5% used 20–39 times in past 12 mths users 5.6% used 10–19 times in past 12 mths users 6.9% used 6–9 times in past 12 mths users 17.3% used 3–5 times in past 12 mths users 59.9% used 1–2 times in past 12 mths users
<i>OTHER STIMULANTS</i>		
Smart & Fejer (1969)	LSD users (n = 100)	70.0% ever used
Whitehead (1969)	students in Halifax Nova Scotia (n = 1,604)	6.4% used in past 6 mths overall 7.6% used in past 6 mths male 5.2% used in past 6 mths female
Kim (1970)	young prison inmates (n = 71)	30.0% used before arrest (amphetamines)
Bilodeau (1971)	secondary and CEGEP students in Montreal (n = 4,509) 1969 (n = 7,419) 1971	5.9% used in past 6 mths 1969 8.1% used in past 6 mths 1971
Fejer & Smart (1972)	adults in Toronto, Ontario (n = 1,200) 1971	3.6% used in past 12 mths (stimulants)
Love & Killorn (1973)	students in Charlottetown (n = 1,709) 1972	3.8% used in past 6 mths
Smart & Fejer (1973)	adult cannabis users in Toronto (n = 101)	19.8% ever used

TABLE 7 (continued)

Author	Type of population	Rate of use
Russell & Hollander (1974)	students (grades 9-12) in Vancouver (n = 2,496) 1970 (n = 1,732) 1974	6.7% ever used 1970 (amphetamines) 11.7% ever used 1974 (amphetamines)
Annis & Watson (1975)	students (grade 9) in Timmins, Ontario (n = 88) dropouts (n = 827) non-dropouts	10.0% initial interview dropouts 7.0% follow-up dropouts 4.0% initial interview non-dropouts 4.0% follow-up non-dropouts
Bakal <i>et al.</i> (1975)	students in rural Alberta (n = 8,967) 1971 (n = 7,704) 1974	6.3% ever used 5.9% ever used
Smart & Fejer (1975)	students (grades 7, 9, 11, 13) in Toronto (n = 6,447) 1968 (n = 6,890) 1970 (n = 6,641) 1972 (n = 3,479) 1974	7.3% used in past 6 mths 1968 6.7% used in past 6 mths 1970 6.4% used in past 6 mths 1972 5.8% used in past 6 mths 1974
Smart & Goodstadt (1976)	household sample in Ontario (n = 1,015)	0.7% used in past 12 mths overall 0.8% used in past 12 mths male 0.6% used in past 12 mths female
Smart <i>et al.</i> (1978)	household sample in Durham, Ontario, 18 and over (n = 993)	4.2% ever used 0.7% used in last 12 mths 0.3% used in last mth
Erickson (1980)	cannabis criminals (n = 85) 1974	48.0% ever used (amphetamines, oral)
Liban & Smart (1980)	Indian students (grades 7-13) in Ontario (n = 71) 1979	11.4% used in past 12 mths (prescription) 14.3% used in past 12 mths (non-prescription)
Smart & Blair (1980)	household sample in Durham, Ontario, teenagers 14-18 (n = 292)	5.1% ever used (amphetamines) 4.1% used in past 12 mths (amphetamines) 1.4% used in last mth (amphetamines)
Smart <i>et al.</i> (1981a)	household sample in Durham, Ontario, non-students 14-25 (n = 173)	14.5% ever used (amphetamines)

TABLE 7 (continued)

Author	Type of population	Rate of use
Smart <i>et al.</i> (1981a)	students (grades 7–13) in Ontario (n = 4,687) 1977	6.6% used in past 12 mths 1977 (prescription)
		7.2% used in past 12 mths 1977 (non-prescription)
	(n = 4,794) 1979	5.9% used in past 12 mths 1979 (prescription)
		10.6% used in past 12 mths 1979 (non-prescription)
	(n = 3,270) 1981	6.1% used in past 12 mths 1981 (prescription)
		12.1% used in past 12 mths 1981 (non-prescription)

Higher rates of speed use have been found among CEGEP students in Montreal, native Indian students, and people convicted of cannabis possession (28%). The high rate for CEGEP students—11% using in the past six months—may reflect the “eastern character” of speed use. Indirect evidence suggests that rates of use were highest in the 1970s in Ontario and Quebec.

Table 7 also shows the frequency of speed use in different populations. The majority in all groups used speed only once or twice. Frequent use is uncommon; for example, only 15.9% of high school users in Ontario had taken it as often as 10 times.

Numerous studies have asked about the use of stimulants in different populations. These studies may formulate the question differently—that is, about stimulants, about amphetamines, about stimulants other than speed, etc.—and therefore comparisons should be made cautiously. The results, however, show a remarkable consistency.

In the early 1970s about 6% to 8% of high school students reported the use of stimulants, about twice as many as reported speed use. As with speed, numbers of users declined between 1968 and 1974 in Ontario (7.3% to 5.8%). However, there was a substantial increase reported in the Vancouver study in 1971–74. The studies in Ontario have asked

about prescription and non-prescription use separately, and non-prescription use has always been higher.

Stimulant use among adults (both prescription and non-prescription) was also higher in the early 1970s. Fejer and Smart found that 3.6% of Toronto adults used them in 1971, but later studies have found rates under 1% for use within the previous 12 months. As expected, the highest rates of use were found among prison inmates (30%), LSD users (70%), school dropouts (70%), adult cannabis users (19.8%), and those convicted of cannabis possession (48%).

In recent studies, the majority of young stimulant users took them infrequently. For example, about 70% of both non-prescription and prescription users in Ontario schools reported taking them five times or less within the previous year; only 6% took them as often as 40 times. However, use among adults seems more consistent, probably because they were being prescribed as diet pills. For example, Fejer and Smart found in 1971 that 51% of adult users took them daily. Smart and Goodstadt found in 1976 that 36.4% of adult users took them daily.

STIMULANT USE AS DETERMINED FROM CONVICTION AND HOSPITAL RECORDS

Possession for the purpose of trafficking and the sale and importation of stimulant drugs without prescription or license are illegal under the Food and Drugs Act. Convictions have shown a trend over time similar to that seen in the survey data, although the peak for convictions was 1973. Table 8 shows the conviction data for 1968 to 1980. Convictions for methamphetamine have usually been 10 or more times as numerous as those for amphetamines. Methamphetamine convictions, unimportant before 1970, reached a peak of 287 cases in 1973, but declined to 172 by 1979. Amphetamine convictions increased only after 1974, with a peak in 1977 and a later decline to 1974 levels. Seizures of drugs show essentially the same pattern: far more methamphetamine seized, with a peak in 1973 and 1974 and a decline to a very low level by 1977 (only 5.8 lb compared to 119.3 lb in 1974). It is interesting to note that at the height of the speed epidemic over 80% of the convictions occurred in Ontario. This pattern is totally different from that for narcotics or even cocaine, another stimulant drug.

Cases seen at poison control centres (1975) involving amphetamines reached a peak in 1971 (272 cases) and declined by 1979 (62 cases). By 1976 there were no deaths listed with amphetamines as the primary cause.

In general, the survey, conviction, and hospital data locate the

TABLE 8

*Amphetamine and Methamphetamine Convictions
under the Food and Drugs Act, 1968-1980*

Year	Amphetamines	Methamphetamine
1968	5	7
1969	4	12
1970	13	64
1971	5	123
1972	7	248
1973	8	287
1974	6	173
1975	12	131
1976	35	193
1977	41	210
1978	23	199
1979	12	172
1980	0	195

Note: The figures for 1976-79 were greatly revised in the 1980 report from those published earlier.

Source: *Drug Users and Conviction Statistics*, Bureau of Dangerous Drugs, Health and Welfare Canada.

speed epidemic in the period 1970-73; far fewer cases were seen by the late 1970s. While amphetamine use never really constituted an epidemic in the same sense, it seems to have continued for a longer period before declining in the late 1970s.

CHARACTERISTICS OF STIMULANT USERS

Studies of high school and adult populations have identified several characteristics of users. Recent studies of students in Ontario found no sex difference in the use of either speed or stimulants generally (Smart *et al.*, 1981a). However, studies in the 1970s showed a preponderance of males. The peak age for use of speed and non-prescription stimulants seems to be 16 or 17. Users have lower grades in school than non-users and are more frequent users of virtually all other drugs, including cannabis, alcohol, and tobacco. They have higher anxiety scores and have more often received treatment for psychological problems than non-users (Fejer and Smart, 1972a).

The study of adult stimulant users in Toronto in 1971 (Fejer and Smart, 1972b) showed no difference between males and females in proportion of users. However, women were more frequent users than men, in many cases taking amphetamines for weight control. Rates of use were much higher among single persons and among those who had recently visited a psychiatrist.

Several studies have been made of speed users in Canada. Levine *et al.* (1972) studied 218 speed users in Toronto. Most were young middle-class males from stable homes. Few were working or seriously involved in school, and most had had trouble with police in connection with drug dealing, robbery, vagrancy, or assault. They had begun their drug-using careers at around 14 years of age. Almost all had used cannabis, hallucinogens, and opiates, and a minority had used solvents and cocaine. About 75% of the students were clinically depressed and 40% had sought psychiatric help. Escapism seemed to be a major theme in their lives and their use of speed.

A somewhat similar study was made by Cox and Smart (1972), also in Toronto. There were 75 street users of speed, including 15 casual users, 27 moderate users (a few times a week), and 30 heavy (almost daily) users. As in Levine *et al.*'s (1972) study, most were males and from middle-class homes where parents often used tranquillizers or sleeping pills. Members of all groups tended to be polydrug users and had extensive experience with cannabis and LSD. More than half (57%) had seen a psychiatrist before starting speed; their psychological test results reflected schizophrenic and paranoid psychopathology.

Similar results were found by Brook *et al.* (1976) in their study of speed users admitted to a therapeutic community. However, they did find a higher rate of disturbance among females, and they note that more than half had attempted suicide.

The available studies clearly show that speed use is often a response to serious psychological problems in people already made receptive by use of other drugs and by heavy exposure to drugs at home.

IS SPEED USE AN EASTERN PHENOMENON?

As mentioned earlier, survey data indicate a higher level of speed use in Ontario and Quebec than in other provinces. Also, more than 80% of convictions for methamphetamine-offenses occurred in Ontario. Information about police drug seizures identified as methamphetamine show the same trend—almost 90% of related convictions were from Ontario (Health and Welfare Canada, Field Information Services, 1976) in recent years. This pattern is totally different from that for heroin or co-

caine, for which a majority of convictions and seizures occur in British Columbia.

What should account for the high level of speed use in eastern Canada, especially Ontario? It could be accidental, in that a few enterprising street chemists decided to establish their laboratories and distribution networks in Ontario. It could also relate to features of the lifestyle in Ontario as compared to other provinces. Speed users seem to epitomize the fast-moving business-oriented lifestyle of the large city. They are ever active, excited, and confident as they rush eagerly from one activity to another, doing business (in their case drug related) all the time. The emphasis on hustling is certainly typical of the large cities in Ontario which became the speed centres of the 1970s. Some special study relating stimulant use to big-city lifestyle might be of considerable interest.

THE CURRENT STATUS OF STIMULANT USE IN CANADA

Much evidence suggests that stimulants, and especially speed, are disappearing as an important drug problem. Convictions and seizures of both types of drugs have decreased in the past 10 years (table 8). Much smaller amounts of amphetamines are imported and restrictions have been placed on their prescription. Fewer than 1% of adults and 3% of students report any recent stimulant use. However, non-prescription stimulant use increased among female Ontario students from 1977 to 1981.

Deaths known to be due to amphetamines have reached zero, and amphetamine-related contacts with poison control centres have greatly decreased. Clearly, the major speed and amphetamine epidemic of the early 1970s has ended. Nevertheless, stimulant use among young people is still important and worth watching.

Information on admissions to treatment for stimulant drug problems is difficult to obtain. Data from the crisis centre in Calgary (Clark and McKiernan, 1981) show a reduction in stimulant cases from 13% of the total in 1977 to only 5% in 1978. The emergency services of the Addiction Research Foundation also indicate a reduction in speed cases, from 10.7% of the total in 1976 to 5.5% in 1981.

SUMMARY

Stimulants are drugs with arousing or exciting effects. They have been used for diet control, for increasing energy, and for staying awake.

Their main illicit use is for kicks or euphoria. The most important illicit stimulant in Canada is methamphetamine or speed, which is usually injected. Harmful effects of speed and other amphetamines include tolerance, dependence, and a propensity to paranoia and violence. Speed users have a high rate of deaths both from toxic drug effects and from violence. They are typically disturbed, polydrug-using males who live in large eastern cities. Stimulant and speed use are now at a relatively low level in both adult and student populations in Canada. The peak for the speed epidemic was 1970–73. All indicators of problems including convictions, seizures, and hospital admissions show large recent declines in the number of speed cases. However, non-prescription stimulant use has shown a recent increase among female students in Ontario.

Cocaine

Cocaine is a powerful stimulant and local anesthetic. It is an alkaloid derived from the leaves of the coca bush, *Erythroxylon coca*, which grows wild or under cultivation in some parts of South America. The majority of coca is cultivated in Peru, Chile, and Bolivia. However, lesser amounts are grown in Java, Mexico, the West Indies, and India (Clark, 1973). Currently cocaine is one of the most popular illegal drugs in both the United States and Canada.

Most cocaine comes from plants specifically cultivated for the purpose. The coca bush can grow as high as 12 ft but most are kept at 3 to 6 ft. It can be harvested several times a year. The plants grow best on the slopes of the Andes in cool, humid, frost-free zones at the 3,000–5,000-ft level.

After the leaves are picked, they are stored in drums with kerosene or other solvents. The resulting coffee-colored paste is then sold to laboratories for processing. Pure cocaine is a white or almost colorless crystalline powder. Coca leaves contain about 1% cocaine (Adriani, 1962). Cocaine may be referred to on the street by any of several names, such as “coke,” “snow,” “flake,” “lady,” “the rich man’s drug,” “leaf,” or “blow.”

COCA AND COCAINE USE

Coca and cocaine are used in a variety of ways. The traditional method among Indians in South America has been to chew coca leaves with a little lime and a binding agent (cornstarch or guano). More recently, coca paste has appeared in urban centres in Peru (Jeri *et al.*, 1978), where it is smoked with cigarettes. In India it is chewed with betel nut and such spices as cinnamon.

Coca leaves have been used for at least 1,200 years in Peru. Leaf designs have been found on pottery shards dating back to the 9th century (Gay *et al.*, 1973). Coca is still chewed by Indians and others in the

Andes to reduce fatigue, alleviate hunger and thirst, reduce muscular pains, and treat headaches and diseases of the eyes, ears, nose, and throat. Clearly, the drug makes the difficult lives of the poor more tolerable, especially in the absence of adequate medical care. At the time of the coming of the Spaniards to Peru, coca was thought to be a divine gift and often restricted to the nobility. Now coca is chewed mainly as a stimulant and a cure-all, and its magical or divine properties seem to have been forgotten.

Cocaine use had a long history in Canada (see chapter 1) up to the early years of this century in a variety of drinks, patent medicines, tablets, and even cigarettes and chewing gum. All of these uses have now disappeared. Now cocaine is used legally in a variety of spray and liquid preparations (5% - 10% cocaine) as a local anesthetic, chiefly for surgery of the eye, ear, nose, and throat. Some addicts fake ear and nose ailments so as to gain access to a physician's office and spot the location of cocaine preparations; when the physician's back is turned, they steal the drugs (Spotts and Shontz, 1980).

Street cocaine is normally used for its stimulating and euphoric effects. It varies in quality from 15% to 80% pure and may be adulterated with lactose, powdered milk, talcum powder, sugar, or other stimulant drugs such as procaine or lidocaine. The drug is usually sniffed ("snorted") through a straw after being laid out in narrow "lines" about 1 to 2 inches long. It may also be injected subcutaneously or intravenously or put directly on mucous membranes or the genitalia for absorption through the skin. Sometimes heroin addicts mix heroin and cocaine for a "speedball" for a heightened euphoric effect. Cocaine may also be mixed with speed for the "bombita," especially popular among Latin Americans in the United States.

At present, cocaine is a relatively costly drug in North America, with street prices averaging around \$100 per gram and rising quickly. Users seem to take about 40-50 mg per sniffing session (Spotts and Shontz, 1980) for a cost of about \$5 per dose. They may, of course, take more than one such dose at a session.

Street cocaine is frequently of poor quality. Only 11 of 19 street samples analyzed by the Addiction Research Foundation laboratories actually contained any cocaine at all. When cocaine is present, it is frequently combined with lidocaine (a local anesthetic) or ephedrine (a non-regulated stimulant).

THE EFFECTS OF COCAINE

The acute effects of cocaine are striking and rapidly felt. When sprayed on mucous membranes, it has an almost immediate anesthetic

effect lasting for 20 to 40 minutes but virtually no euphoric effects. When sniffed or injected, it produces an equally rapid euphoria marked by central nervous system stimulation and a feeling of great energy. There is some increase in mental alertness and a reduction in feelings of hunger and thirst, as well as garrulousness and restlessness. There is also an increase in heart rate, breathing, body temperature, and sweating. Pupils will be dilated. Users feel strong, active, wide-awake, happy, and equal to anything.

With larger doses anxiety, depression, headache, confusion, dizziness, and fainting may occur. There may also be bizarre, aggressive, and violent behavior as well as severe paranoia (Clark, 1973; Jeri *et al.*, 1978). The depression which rapidly follows the stimulation results in lowered heart rate and breathing (Gay *et al.*, 1973).

HARMFUL EFFECTS OF COCAINE

As with any strong stimulant, a variety of adverse effects are possible. A cocaine psychosis has been described, marked by disorientation, hallucinations, rigid or repetitive behavior, paranoid delusions, and a tendency to violence. Fortunately, death seems to be uncommon and to occur only after very high doses. However, some 68 deaths were recently reported from Florida (Wetli and Wright, 1979). About 40% involved the use of other drugs, but recreational sniffing of cocaine alone did result in some deaths. Death can be due to cardiac arrest and depression of respiratory or vasomotor centres or convulsions. Paranoid delusions and hallucinations make cocaine users dangerous and liable to be violent (Eddy *et al.*, 1965).

Tolerance to the effects of cocaine in humans seems not to occur, and there is little tendency to increase the dose.

Dependence on cocaine is well established. Psychological dependence marked by craving and compulsion to keep taking the drug occurs with heavy users, but it is not certain how much use is required to induce this behavior. Animal experiments (Spotts and Shontz, 1980) showed that rats would press a bar 10,000 times to obtain cocaine, but only 4,000 to obtain heroin. Withdrawal symptoms marked by fatigue, disturbed sleep, hunger, irritability, and depression have been found among heavy users.

THE SOURCE AND AVAILABILITY OF COCAINE

Detailed study of the source and availability of illicit cocaine in Canada has apparently not been made. Most cocaine seized here seems to come originally from Peru or Bolivia, although some seems to have

been processed in Colombia. Whether cocaine is usually available in all centres where drugs are usually sold is also unknown. However, reports of use have come from all large Canadian cities.

Thefts of cocaine anesthetics from pharmacies and doctors' offices are frequent. For example, in 1980 the Bureau of Dangerous Drugs reported 172 thefts or losses of cocaine from legal sources in Canada, most of them of the "break and enter" type. Almost all of the thefts occurred in Ontario, Quebec, and British Columbia.

THE EXTENT OF COCAINE USE

Data on the extent of cocaine use in Canada is mostly recent and very limited. Table 9 shows some of the results. Use in general adult samples is very low: only 2.7% of Durham adults reported ever using, 0.5% reported use within the previous 12 months, and none reported use within the previous month. About 4.8% of students in Ontario had used cocaine in 1981, a proportion not much changed from 1977 (3.8% having used). Among teenagers in Durham, 2.7% had ever used, 1.4% within the previous year, and 0.3% within the previous month. Rates of use were found to be higher among native Indians (5.6% having used), but the difference was not statistically significant. However, nearly half of those convicted of cannabis possession in Toronto reported cocaine use.

The majority of cocaine users report very infrequent use, although such information is limited. More than two-thirds of high school users had used only once or twice within the previous year. A total of 10.4% had used as often as 10 times. Among those convicted of cannabis possession, 3.0% used as often as once a month.

Some indication about long-term trends in the extent of use can be gained from examining data on convictions and "known users." Table 10 shows the available information from 1965 to 1980. Prior to 1965 there were virtually no convictions for cocaine offenses in Canada and there were only negligible numbers up until 1970. That seems to be the year when cocaine first came to the notice of law enforcement officials, with 12 convictions. During the 1970s there was a very rapid increase in convictions. By 1980 they were nearly three times as high as convictions for heroin (642 and 223 respectively). No other drug shows such a phenomenal increase in convictions. Similarly, cocaine seizures were minimal in the years before 1970 but as high as 82.4 lb in 1973-74.

Information on "known users" of cocaine shows much the same trends for convictions (table 10). There were very few "known users" before 1970, but a total of 1,346 by 1978 and 2,468 by 1980. The ratio of

TABLE 9

*Studies of Cocaine Use
in Various Canadian Populations*

Author	Type of population	Rate of use
Smart <i>et al.</i> (1978)	household sample in Durham, Ontario, 18 and over (n = 993)	2.7% ever used 0.5% used in last 12 mths 0.0% used in last mth
Erickson (1980)	cannabis criminals (n = 85) 1974	49.0% ever used 3.0% used in past 6 mths once or more per month 19.0% used in past 6 mths less than once per month
Liban & Smart (1980)	Indian students (grades 7-13) in Ontario (n = 71) 1979	5.6% used in past 12 mths
Smart & Blair (1980)	household sample in Durham, Ontario, teenagers 14-18 (n = 292)	2.7% ever used 1.4% used in past 12 mths 0.3% used in last mth
Smart <i>et al.</i> (1981a)	students (grades 7-13) in Ontario (n = 4,687) 1977 (n = 4,794) 1979 (n = 3,270) 1981 users only, 1981 (n = 157)	3.8% used in past 12 mths 1977 5.1% used in past 12 mths 1979 4.8% used in past 12 mths 1981 4.4% of users used 40+ times in past year 1.8% of users used 20-39 times in past year 4.2% of users used 10-19 times in past year 8.1% of users used 6-9 times in past year 14.1% of users used 3-5 times in past year 67.4% of users used 1-2 times in past year

TABLE 10

*Cocaine Convictions and Known Cocaine Users,
1965-1980*

Year	Convictions	Known users
1965	3	1
1966	1	2
1967	0	—*
1968	2	—*
1969	1	3
1970	12	7
1971	19	49
1972	44	122
1973	123	284
1974	237	774
1975	289	1,077
1976	363	1,346
1977	421	1,711
1978	485	2,155
1979	518	2,559
1980	642	2,468

Note: The figures for 1976-79 were greatly revised in the 1980 report from those published earlier.

Source: *Drug Users and Conviction Statistics*, Bureau of Dangerous Drugs, Health and Welfare Canada.

"known users" to convictions is about three or four to one in recent years. About a third of known users are in British Columbia and 30% in Ontario; most of the remainder are in Quebec and Alberta. Few reside in the Maritimes (only 18 of 1,346 in 1978).

CHARACTERISTICS OF COCAINE USERS

Unfortunately, we have only one study of cocaine users in Canada and few recent studies for other countries. Because of its relatively high cost, it is said to be "the rich man's drug." Stories abound of cocaine use at high-class parties and discotheques and by actors, athletes, entertainers, members of the White House staff, and other well-to-do people. However, a good cocaine fix can be had for about \$5, which is about the price of a movie and hence well within the reach of the average wage-earner or teenager. Solid information on characteristics of users is difficult to find. Many studies in the United States (Spotts and Shontz, 1980) seem to show that its use is very heavy among heroin addicts and users of other illicit drugs, such as speed and cannabis.

Only one study of the characteristics of users in Canada seems to be available: Smart *et al.*'s (1981a) survey of users in the 1979 Ontario school study and in the Durham Region study of adults. Both involved large representative samples and well-tested methods of assessing drug use. Student cocaine users were mostly males and had lower grades in school than non-users. They were older than cannabis users and than non-users of either drug. They were also far more likely to use other drugs than were cannabis users. Far more cocaine users than cannabis users reported an alcohol or drug problem.

The results for the adult sample provided no support for the idea that cocaine is "the rich man's drug." Cocaine users had the same income as did cannabis users and non-users of either drug; however, their social status in terms of prestige was somewhat lower. Cocaine users were younger and more often males than cannabis users of than non-users of either drug. Virtually all adult users were multiple-drug users, and many had signs of alcohol dependency and alcohol problems. This study concluded that cocaine seems not to be primarily the recreational drug of the well-to-do but one of a variety of drugs sought by heavy users who have both drug and alcohol problems.

It would be of interest to have more studies of heavy cocaine users in Canada to determine how many have problems with cocaine, how many are addicted, and how long their cocaine careers last.

COCAINE USERS IN TREATMENT

Cocaine is a drug with important adverse effects, including psychosis, paranoia, and dependence. Currently in Canada, convictions are much higher for cocaine than for heroin, and a large number of Canadians have at least tried the drug. Nevertheless, admissions of people to treatment with cocaine as the primary problem seem to be rare. There have been only a few cases per year presenting cocaine problems at the Addiction Research Foundation emergency services. Poison control centres report few cases: there were only 24 in 1975 as opposed to 114 for volatile substances and 116 for amphetamines (Health and Welfare Canada, Poison Control Program, 1975). Also, data from a "street-level" drug and crisis centre (Clark and McKiernan, 1981) in Alberta found no cases involving cocaine during 1977 and 1978, although cases involved most other kinds of drugs (cannabis, opiates, solvents, stimulants, etc.). In conclusion, the fragmentary data we have suggest that cocaine is not a drug which requires many users to seek treatment. Presumably, whatever adverse effects occur are few, or dissipate quickly, or are of a nature that can be handled by friends or relatives.

SUMMARY

Cocaine is a powerful stimulant and anesthetic derived from the coca bush. Coca has been chewed for centuries by Andean Indians to relieve hunger and fatigue. Cocaine, which is the form used in North America, gives a rapid anesthetic effect when sprayed on mucous membranes or euphoria and excitement when injected or sniffed. Harmful effects include bizarre, paranoid behavior and a tendency to violence. Dependence on cocaine is well established, but tolerance seems unimportant. Although use of cocaine among Canadian adults is rare, about 5% of students report use in the past year. Very large increases have occurred since 1970 in the numbers of convictions for cocaine and in seizures of the drug. Currently, cocaine users seem to be multiple-drug users who frequently have alcohol or drug problems. Few cocaine users seem to enter treatment for their drug use despite its harmful effects. The adverse effects are presumably treated by users themselves or their friends and relatives.

LSD and Other Hallucinogens

The category of “hallucinogens” or “psychedelics” is a sort of catch-all or miscellany of different drugs with varying effects on mood, sensation, and emotion. The hallucinogens include LSD (lysergic acid diethylamide), which is a real inducer of hallucinations, PCP (phen-cyclidine), which is a veterinary tranquillizer, and MDA (methylenedioxymphetamine), which has both stimulant and hallucinogenic properties. There are as well a variety of plant-derived drugs. In fact, the numbers of hallucinatory drugs is certainly in the hundreds if all those derived from plants, such as peyote and mescaline, jimson weed (*datura*), and psilocybin mushrooms, are considered. Generally, these latter drugs have rarely been used in Canada. Samples alleged to contain mescaline have almost always been found to contain no drug at all or only LSD or speed (Marshman and Gibbins, 1970). Although of interest in some countries, their illicit use in Canada is so rare that we can largely ignore them here. Readers who wish to know more about them could consult any of a variety of references (Slotkin, 1956; La Barre, 1964; Casteneda, 1972).

Another hallucinogen, STP (“serenity, tranquility, and peace”) had a brief appearance in Canada in the early 1970s. It turned out to be an experimental drug (dimethyloxymethylamphetamine) similar to that developed by the Dow Chemical Company with some stimulant and some hallucinogenic effects. It was expected by many users to produce much stronger and longer-lasting effects than LSD, but it turned out to have much milder properties. It seems to have largely disappeared from the street scene, never having been very important compared to the other hallucinogens.

The main illicit hallucinatory drugs now available in Canada seem to be LSD, MDA, and PCP. Of these, LSD has always been the most important, judging by availability, use rates, and convictions for possession and trafficking.

LSD: ITS EARLY HISTORY

LSD must be the prototypic hallucinogen. It produces strong illusions and hallucinations in tiny doses, and yet has almost no other effects. It was developed by two Swiss chemists, Hofmann and Stoll, who were investigating the therapeutic uses of ergot, a chemical from a fungus that grows on rye and other grasses. Hofmann accidentally discovered the hallucinogenic properties of LSD and later confirmed his findings by taking large doses himself. He experienced visual illusions, hallucinations, disorganizations of his space and time senses, and fear that he was going out of his mind.

For some time LSD had a variety of uses in psychiatry. It was thought in the 1950s to create a sort of "experimental schizophrenia"; however, it is now recognized that it provides a poor model. LSD creates more illusions but cannot simulate the delusions and thought disorders of schizophrenia. Several psychiatrists, especially in Saskatchewan (Hoffer, 1965), used LSD as an aid to psychotherapy. It had a period of popularity in the treatment of alcoholism, although controlled trials eventually showed that it had no beneficial effects (Smart *et al.*, 1967). LSD was also used with terminally ill patients to reduce anxiety and prepare them for death. It now seems to have no use in psychiatric treatment or research.

Non-medical or "psychedelic" use of hallucinogens on a wide scale began in the early 1960s, although mushrooms containing psilocybin and cacti containing mescaline had been used for generations by Indians of Mexico and the American Southwest (La Barre, 1964; Castaneda, 1972). A group of psychologists at Harvard University, led by Richard Alpert and Timothy Leary, introduced hallucinogens to North American middle-class circles. Their use of the drugs in psychotherapy led to much personal experimentation with LSD and to their promotion of it for "mind expansion" or "self-exploration." Young people in large numbers started to "turn on" (with LSD), "tune in" (to the real meanings in the world), and "drop out" (leave school and other establishment institutions) in response to exhortations from Leary and others. LSD then became the most important drug of the late 1960s, extensively used by hippies, intellectuals, and young people of all descriptions for self-exploration, recreation, and "mind expansion." A study of the Yorkville hippie movement in Toronto (Smart and Jackson, 1969) showed that all hippies and most weekend hippies used hallucinogenic drugs, especially LSD.

Extensive claims were made in the 1960s for LSD and other hallucinogens as aids to self-understanding—claims never made for other popular illicit drugs such as cannabis, speed, or solvents. These claims gave hallucinogens a respectability and a following well beyond what

they might otherwise have achieved. With the passing of the hippie movement in the mid-1970s, however, LSD is now usually seen as only another recreational drug with strange effects. The earlier supposed psychological benefits are rarely alluded to by drug users, although in some circles they are still important.

The legal status of hallucinogens varies greatly. Possession of LSD without authorization for medical or scientific reasons (now rarely given) is illegal under the Food and Drugs Act. Manufacture, importing, and trafficking in LSD are also illegal and carry heavier penalties (see chapter 8 on national laws). MDA also is illegal under the Food and Drugs Act. PCP is available as a veterinary tranquillizer, although not used frequently; however, illegal possession, sale, and trafficking are covered under the Narcotic Control Act. Other hallucinogens are illegal under the Food and Drugs Act.

SOURCE AND AVAILABILITY OF HALLUCINOGENS

LSD is a white, odorless, crystalline substance, but most often it is mixed with water or various powders or soaked into blotting paper. It can be taken orally or injected. LSD is potent in very small amounts—as low as 40 micrograms—but about 140 micrograms seems to be the usual street dose.

PCP is also a soluble white powder. It can be smoked in cigarettes, injected, or taken orally as a liquid or tablet.

MDA is usually found in pill form but can also be injected. The usual street dose is 100–150 mg.

The source of hallucinogens is often not known. However, it seems that most LSD is made in illicit laboratories either in Canada or more commonly in the United States. The studies made by the Le Dain Commission in the early 1970s indicated that most LSD sold on the street was imported, chiefly from illicit laboratories in California. Legal supplies of LSD have almost disappeared, for the Sandoz Company, which held the patent, withdrew the drug in 1966. Nevertheless, several governments probably still keep supplies for scientific purposes. LSD is not too difficult to make, given the basic materials, lysergic acid, a trained chemist, and the considerable amount of equipment required.

MDA and PCP are probably always imported rather than made in Canadian street laboratories. Since PCP is available as a veterinary tranquillizer, some supplies may be diverted to the illicit market. PCP is relatively difficult to make, and is probably beyond the capabilities of most street laboratories.

Analysis of street samples of hallucinogens shows various results. A large number of studies done by the Le Dain Commission (1973) showed that about 69% of purported LSD samples were LSD, 9% were LSD plus some other drug, and 9% were some other drug only. Also, LSD was frequently found in samples sold as other drugs: for example, PCP and barbiturate samples often contained LSD as well.

Samples purported to be MDA were less often as represented. Only 42% were MDA alone, 20% were MDA and another drug, 27% were another drug only, and 11% were no drug at all. PCP was found in many samples both alone and in combination, usually with LSD or speed. MDA itself was almost never sold as speed.

In the Le Dain Commission studies, samples alleged to be mescaline and psilocybin virtually never contained those drugs but were other hallucinogens or nothing at all.

Results from tests made at the laboratories of the Addiction Research Foundation in 1975-80 show much the same results. Of 32 alleged LSD samples, 25 were actually LSD. However, only 3 of 10 MDA samples contained MDA, and only 19 of 26 PCP samples contained PCP. Most PCP was found in samples supposed not to contain it. Psilocybin was rarely found (ARF, 1981).

In the years 1979-80 the Health Protection Branch Laboratories (ARF, 1981) tested 3,015 LSD samples, but only 763 of PCP, 11 of MDA, and 289 of psilocybin. The indication is that LSD is the most common hallucinogen currently available in Canada.

In general, LSD is also the most reliable hallucinogen for being what it is alleged to be. Those buying LSD have a good (but not perfect) chance of actually getting LSD. However, buyers of other hallucinogens will be much less fortunate, often getting LSD, PCP, speed, or maybe nothing at all.

THE EFFECTS OF LSD AND OTHER HALLUCINOGENS

The major effects of drugs such as LSD, MDA, and PCP are similar, taking into account dosage differences and individual reactions of a varying nature. The great majority of research studies on hallucinogens have been done with LSD. Its effects are thus the best known of any hallucinogen from both experimental and clinical studies.

The effects of LSD are difficult to predict for any particular individual. They depend upon the user's previous experience with the

drug, the expectations held about its effects, and even whether it is taken in solitude or in company with other people. Of course, the dose level is important, and a very wide range of doses seems to be used: from 140 micrograms (an average street dose) to as much as 800 micrograms (previously given in therapeutic situations).

Moderate doses create effects consistent with central and autonomic stimulation. Heart rate and blood pressure increase, pupils widen, and temperature rises. Psychological tasks such as learning, remembering, and concentrating are impaired (Jarvik, 1967). Even motor skills such as walking, driving a car, or climbing are difficult for most users under LSD. They may exhibit odd or difficult-to-explain responses during such tasks, and they have trouble completing any task successfully.

Subjective effects have been investigated in a number of careful studies (e.g., Linton and Langs, 1962; Dittman and Whittlesey, 1959) and the investigators have reached essentially the same conclusions. The subjective effects include:

- Intellectual disturbances, such as difficulties in concentration, impaired judgment, and difficulty in retaining ideas.
- Mood changes in which different moods, mostly unpleasant, come and go unexpectedly. Many people feel that they are losing psychological control of themselves because of these wide fluctuations. Anxiety and fear are common, but elation and euphoria occur with some users.
- Changes in body image, involving perceptual distortions of limbs (e.g., the arms are far longer than in reality, or the facial features may seem to disintegrate), and a breakdown of the barriers between the body and the outside world: for example, a man standing on a beach felt that he was part of the waves breaking on the shore. These changes may be perceived by the user as pleasant, neutral, or extremely threatening.
- A disturbed time sense wherein “clock time” is slowed down. The user feels that it is much later than it really is.
- Disturbances in sensations: objects often seem to lose their boundaries or merge into each other. While visual hallucinations are common, auditory ones are not.
- Some users experience childhood memories and “transcendental” feelings of unity and deep insight into themselves. Religious or spiritual insights seem to occur to some users, but they are rare. These effects seem to be uncommon among users in general, but they are sought. They are the effects that were hoped for by those who gave LSD for therapeutic reasons.

ADVERSE OR HARMFUL CONSEQUENCES OF LSD AND OTHER HALLUCINOGENS

Some people have said that all effects of LSD are adverse, but many users would not agree. Nevertheless, the ratio of adverse to pleasant experiences seems very high compared to most recreational drugs. Adverse consequences have been reviewed in a number of books and papers (Smart and Bateman, 1967; Le Dain, 1973; Stillman and Willette, 1978; Grinspoon and Bakalar, 1979; Murphree, 1982). An exhaustive review of research on adverse effects of LSD is not intended here, and only a summary of the major adverse effects is included. No adverse consequences seem to occur to all users or at all dosage levels. Some adverse consequences could, in practice, be due to the presence of drugs such as PCP or MDA in the LSD. There have also been many indications that adverse consequences occur more often after large doses, among those who use a variety of drugs, and among those who have had some previous psychiatric problems.

The major conclusions about adverse LSD reactions are as follows:

- Fatalities due to overdoses seem to be non-existent, and no deaths due to LSD exclusively appear to have occurred in Canada. However, suicides involving LSD have been frequently reported. Yet, some of these deaths may have been accidents due to perceptual problems—for example, walking or falling off a bridge.
- “Bad trips” from LSD marked by anxiety, depression, and paranoia are common among both infrequent and frequent users. Most bad trips last a few hours or days at the most and can be easily treated with tranquillizers. However, there are instances of psychotic reactions lasting months and proving highly resistant to treatment. Many bad trips seem to occur when users take LSD in solitude or with poor supervision or inadequate preparation. Bad trips seem to have been rare in therapeutic situations.
- Flashbacks (the return of part of the LSD experience) occurring days or even months afterward are common. About half of users report this phenomenon. Most flashbacks are transitory and cause little problem. Some users find them pleasurable, but in others they provoke anxiety attacks.
- Convulsions and sleep disturbances occur rarely but are very disturbing when they happen.
- There is a rapid tolerance developed to LSD but no physical dependence. Some psychological dependence on LSD may occur, but it is probably rare, given that most users take LSD infrequently.

PCP

Some of the mood and behavioral effects of LSD also occur with PCP, but not those of an insightful or transcendental nature. Some effects of PCP are not unlike those of alcohol—users look and feel drunk and appear zombie-like. The subjective feelings include a mixture of anxiety, depressions, and excitement. Euphoria may be felt, but it is not a reliable effect. PCP users often show facial grimacing or jaw clenching (Gallant, 1980; Murphree, 1982).

Unfortunately, PCP users are often hostile and may have violent outbursts. Anxiety and fear seem to be common effects. Also, PCP induces feelings of isolation and apathy. It seems to reduce the amount of sensory input which is processed. It also produces an underestimation of time (in contrast with overestimation for LSD).

Adverse effects of PCP are very common. Violence and aggression are more frequent than with LSD. Also, a number of overdose deaths have been reported (Cravey *et al.*, 1979) from both moderate and high doses. Several dozen cases of PCP psychosis have been reported from California (Yesavage and Freeman, 1978). Convulsions and comatose reactions have been reported from high doses.

Many "mild PCP intoxications" have been admitted to the emergency services of the Addiction Research Foundation. The characteristics of nine such cases were recently described by Jacob *et al.* (1981). Severe behavior disorders, paranoia, and amnesia often occurred. In high-dose cases, periods of apnea, cyanosis, and muscle spasms especially in the neck were common. Cases were given diazepam or chlorpromazine and other symptomatic treatment and kept in an environment which minimized stimulation.

MDA

Moderate doses of MDA (1.0–1.5 mg per kg of body weight, or 70–100 mg) generally result in a sense of pleasure and well-being. There is heightened self-awareness, and elevated mood, and an introspective turn of thought. MDA does not cause the colorful imagery and distortions of reality characteristic of LSD (Stillman and Willette, 1978). Users often report that MDA adds another dimension to music and certain visual experiences. It often produces feelings of aesthetic delight, joy, and empathy with others and hence has earned the name "love drug." Some users also report LSD-like effects in that it brings back childhood memories and leads to self-exploration (Grinspoon and Bakalar, 1979).

The physiological effects of MDA are like those of other stimulants. It increases heart rate, respiration, and blood pressure. Also, severe

physical exhaustion lasting as long as three days can follow even moderate use. Tolerance and dependence occur as with other strong stimulants. Large doses can cause convulsions leading to death. One death due to MDA was reported by Kalant and Kalant (1976) in Ontario. The Le Dain Commission (1973) found 18 deaths due to MDA in Canada during 1969-72; eight of the cases involved the use of other drugs. The majority of deaths seemed to involve massive doses, several times the usual amount.

EXTENT OF USE OF HALLUCINOGENS IN GENERAL POPULATIONS

The majority of our information about use of hallucinogens comes from the studies of student populations. The ways of asking about hallucinogen use vary considerably from one study to another, and hence comparisons among various studies should be made cautiously. For example, some studies ask only about LSD, or about "LSD and other hallucinogens," giving examples or not.

Table 11 shows the various studies among student groups in Canada. The rates for the early 1970s, the peak of LSD use, vary greatly. They appeared to be 2% to 3% among students in Halifax, Montreal, and Charlottetown, but higher in Toronto (8.5%) and much higher in Vancouver (21.2%). The studies in Toronto, rural Alberta, and Vancouver showed a decline in use between 1970 and 1974. However, the latest studies in Ontario show much higher rates of use than in 1974 (10.2% vs. 4.1%). Also, rates of use among teenagers in Durham were much higher (7.2% having used within the previous 12 months) than among students in 1974. Clearly LSD did not disappear with the hippie movement.

Trends for other hallucinogens generally follow those for LSD. In most studies the proportion of students reporting hallucinogen use is about two-thirds that reporting LSD use, although there are many studies in which rates of use are very similar.

Use of hallucinogens among adults has always been low in Canada; many adult studies do not even inquire about it. The Le Dain Commission national study of 1970 claimed that only 0.6% of adults had used hallucinogens. The Durham study in 1978 found that 5.3% of adults had ever used hallucinogens, but only 0.5% within the previous 12 months and 0.2% within the previous month.

HALLUCINOGEN USE IN HIGH-RISK POPULATIONS

Rates of hallucinogen use have been shown to be high in a number

TABLE 11

*Studies of LSD and Other Hallucinogen Use
in Various Canadian Populations*

Author	Type of population	Rate of use
Whitehead (1969)	students in Halifax (n = 1,604) 1969	2.4% used in past 6 mths LSD overall 2.2% used in past 6 mths other hallucinogens overall 3.1% used in past 6 mths LSD male 4.3% used in past 6 mths other hallucinogens male 1.6% used in past 6 mths LSD female 1.3% used in past 6 mths other hallucinogens female
Kim (1970)	young prison inmates (n = 71)	63.0% used before arrest LSD 1.0% used before arrest "mushroom" 1.0% used before arrest STP 1.0% used before arrest DMT 7.0% used before arrest mescaline
Bilodeau (1971)	secondary and CEGEP students in Montreal (n = 4,509) 1969 (n = 7,419) 1971	3.0% used in past 6 mths LSD 1969 2.5% used in past 6 mths other hallucinogens 1969 8.1% used in past 6 mths LSD 1971 7.7% used in past 6 mths other hallucinogens 1971
Love & Killorn (1973)	students (grades 7-12) in Charlottetown (n = 1,725) 1972	1.8% used in past 6 mths LSD 2.0% used in past 6 mths other hallucinogens 0.4% used 7+ times in past 6 mths 0.4% used 5-6 times in past 6 mths 0.9% used 3-4 times in past 6 mths 2.2% used 1-2 times in past 6 mths
Smart & Fejer (1973)	adult cannabis users in Toronto (n = 101)	36.7% ever used LSD

TABLE 11 (continued)

Author	Type of population	Rate of use
Russell & Hollander (1974)	students (grades 9-12) in Vancouver	
	(n = 2,496) 1970	21.2% ever used LSD 1970
		(?) ever used other hallucinogens 1970
	(n = 1,732) 1974	13.7% ever used LSD 1974
		18.4% ever used other hallucinogens 1974
	use, 1974	0.4% used 50 times in past 6 mths
		0.7% used 11-50 times in past 6 mths
		0.6% used 7-10 times in past 6 mths
		2.9% used 3-6 times in past 6 mths
		4.7% used 1-2 times in past 6 mths
Annis & Watson (1975)	students (grade 9) in Timmins, Ontario	9.0% initial interview dropouts
	(n = 88) dropouts	14.0% follow-up dropouts
	(n = 827) non-dropouts	6.0% initial interview non-dropouts
		6.0% follow-up interview non-dropouts
Bakal <i>et al.</i> (1975)	students in rural Alberta	
	(n = 8,867) 1971	6.5% ever used LSD 1971
		5.4% ever used other hallucinogens 1971
	(n = 7,704) 1974	4.8% ever used LSD 1974
		4.1% ever used other hallucinogens 1974
Smart & Fejer (1975)	students (grades 7, 9, 11, and 13) in Toronto	
	(n = 6,447) 1968	2.6% used in past 6 mths LSD 1968
		2.0% used in past 6 mths other hallucinogens 1968
	(n = 6,890) 1970	8.5% used in past 6 mths LSD 1970
		6.7% used in past 6 mths other hallucinogens 1970
	(n = 6,641) 1972	6.4% used in past 6 mths LSD 1972
		7.2% used in past 6 mths other hallucinogens 1972
	(n = 3,479) 1974	4.1% used in past 6 mths LSD 1974
		5.7% used in past 6 mths other hallucinogens 1972

TABLE 11 (continued)

Author	Type of population	Rate of use
Bilodeau (1971)	(n = 7,419) 1971	4.2% used 1-2 times in past 6 mths LSD 1971
		1.5% used 7+ times in past 6 mths other hallucinogens 1971
		0.7% used 5-6 times in past 6 mths other hallucinogens 1971
		1.1% used 3-4 times in past 6 mths other hallucinogens 1971
		4.1% used 1-2 times in past 6 mths other hallucinogens 1971
Smart <i>et al.</i> (1981a)	students (grades 7-13) in Ontario (n = 4,687) 1977	6.2% used in past 12 mths LSD 1977
		4.4% used in past 12 mths other hallucinogens 1977
	(n = 4,794) 1979	8.6% used in past 12 mths LSD 1979
		5.3% used in past 12 mths other hallucinogens 1979
	(n = 3,270) 1981	10.2% used in past 12 mths LSD 1981
		4.7% used in past 12 mths other hallucinogens 1981
Smart <i>et al.</i> (1979)	(n = 4,794) 1979	0.4% used 40+ times in past 12 mths LSD
		0.5% used 20-39 times in past 12 mths LSD
		0.8% used 10-19 times in past 12 mths LSD
		0.8% used 6-9 times in past 12 mths LSD
		1.7% used 3-5 times in past 12 mths LSD
		4.4% used 1-2 times in past 12 mths LSD
		0.1% used 40+ times in past 12 mths other hallucinogens
		0.2% used 20-39 times in past 12 mths other hallucinogens
		0.5% used 10-19 times in past 12 mths other hallucinogens
		0.5% used 6-9 times in past 12 mths other hallucinogens

TABLE 11 (continued)

Author	Type of population	Rate of use
Smart <i>et al.</i> (1979)	(n = 4,794) 1979	0.9% used 3-4 times in past 12 mths other hallucinogens 3.0% used 1-2 times in past 12 mths other hallucinogens
Smart <i>et al.</i> (1981a)	users only, 1981	7.4% used 40+ times in past yr LSD 4.2% used 20-30 times in past yr LSD 12.0% used 10-19 times in past yr LSD 12.5% used 6-9 times in past yr LSD 16.2% used 3-5 times in past yr LSD 47.7% used 1-2 times in past yr LSD 4.7% used 40+ times in past yr other hallucinogens 1.7% used 20-30 times in past yr other hallucinogens 7.3% used 10-19 times in past yr other hallucinogens 9.8% used 6-9 times in past yr other hallucinogens 17.7% used 3-5 times in past yr other hallucinogens 58.7% used 1-2 times in past yr other hallucinogens

of special populations (table 11). For example, 63% of young prison inmates had used LSD before their arrest. About 12.7% of native Indian students had used LSD and 8.5% had used other hallucinogens. Rates were higher among dropouts both before and especially after they dropped out of school. Also, two studies of cannabis users showed high rate of use. Almost all those convicted of cannabis offenses (86%) had used hallucinogens, as had 30.7% of adult cannabis users in Toronto in 1972. Whitehead and Cabral (1976) showed that cannabis use almost always preceded LSD use in student populations.

CHARACTERISTICS OF HALLUCINOGEN USERS IN SURVEYS

As with most other illicit drugs, hallucinogen use has been found to be more common among males and among those who use other drugs, especially cannabis. Originally, use differences between males and females were very great: in 1968 there were four times as many male users, but by 1981 the ratio was close to even. Studies among students typically show use to be greatest among those aged 16 or 17 or in grades 9 and 11 and among those with low grade averages. Among adults almost all users seem to be aged 25 or under.

EXTENT OF HALLUCINOGEN USE AMONG USERS

Most studies seem to show (table 11) that users take hallucinogens infrequently—cannabis users, for example, would take cannabis far more often. Most surveys of students seem to show that about 50% to 60% of users take hallucinogens only once or twice a year. For example, in the Ontario student survey, 47.7% of LSD users and 58.7% of other-hallucinogen users had taken the drugs once or twice in the previous year. Only 11.6% of LSD and 6.4% of other-hallucinogen users took them as often as 20 times in the year. However, use seems much more frequent in some high-risk groups; for example: 27% of those convicted of cannabis offenses who used hallucinogens used them more frequently than once a month.

CONVICTIONS FOR OFFENSES INVOLVING HALLUCINOGENS

Since offenses involving LSD and MDA were defined only in 1970, we do not have a long series of data on convictions. Table 12 shows that convictions for LSD began in 1970 at a very high level (1,558 cases) and have shown some considerable fluctuations since that time. Peaks are obvious in 1971, 1975, and 1980 as well as a sudden increase from 1978 to 1980.

TABLE 12

*Convictions for Offenses Involving LSD and MDA
and Known Hallucinogen Users, 1970–1980*

Year	Convictions LSD	Convictions MDA	Known hallucinogen users
1970	1,558	72	3,399
1971	1,588	325	3,143
1972	1,161	534	2,411
1973	970	792	2,992
1974	1,482	501	3,630
1975	1,570	318	2,969
1976	989	328	1,016
1977	703	258	1,117
1978	696	178	685
1979	1,166	164	616
1980	1,748	152	1,097

Notes: MDA and LSD were not prohibited until 1970 under the Food and Drugs Act. Known hallucinogen users were first recorded in the year shown. The conviction statistics for 1976–1980 are the revised figures reported in the 1980 issue of the source document.

Source: *Drug Users and Conviction Statistics*, Bureau of Dangerous Drugs, Health and Welfare Canada.

"Known users" data seem to be obtained mainly from LSD convictions, and they show somewhat similar trends. There have been fluctuations over time, with peaks in 1970 and 1974 but large reductions since then. In 1974 there were 3,630 hallucinogen users added to the file, but by 1979 there were only 616. However, there was an increase to 1,097 in 1980, which constitutes a very large jump.

In general, convictions data confirm the story told by the survey data. The peak for hallucinogen use in more recent years is reflected in the convictions data for 1979 and 1980.

SPECIAL STUDIES OF HALLUCINOGEN USERS

Not much recent interest has been taken in hallucinogen users as a group requiring special study. In fact, only two studies, both from the late 1960s, have been concerned with Canadian hallucinogen users outside of the context of treatment. Since both were done at the height of the hippie-generated interest in LSD, they might well be of limited application to the present scene.

Paulus (1969) made an interview study of "psychedelic" drug users in Vancouver; they were probably mostly LSD users, since few other hallucinogens would have been available. She found that the users were typically white Anglo-Saxons aged 19 to 27. Most had a grade 12 education or better and were technically single, from middle- or upper-middle-class backgrounds, and unemployed at the time of the interview. Few had been convicted of delinquent acts or breaches of the Narcotic Control Act. These characteristics set them apart from the narcotic addicts so well known in Vancouver. Narcotic addicts were older and more often married. They had less education (grade 11 and under). Most came from lower-class backgrounds and had convictions for delinquency and drug-related offenses. The narcotic addicts were, in fact, rather conventional in comparison with the psychedelic drug users, most of whom were residents of the Vancouver hippie quarter.

Smart and Fejer (1969) made a study of 100 heavy users of LSD in Toronto and compared their characteristics with those of 46 non-users matched for age, sex, and social class. As in Vancouver, the LSD users were young, well-educated people from the middle and upper-middle classes. Most were under-achievers in terms of their better-than-average levels of intelligence. All LSD users had also tried cannabis. Most users had psychological problems; about half had received treatment for them. Usually, their psychological test results showed abnormalities, either behavior disorders or psychoses, but few were neurotic. LSD use was seen to be a response of certain middle-class young people to psychological problems.

These two early studies of hallucinogen users may be of limited use in defining today's user. Most of those studied were residents or participants in hippie communities now long gone. Drugs such as MDA and PCP were not available then. Whereas users in the 1960s had strong social support for LSD as mind-expanding and semi-therapeutic, that sort of rhetoric seems to have disappeared. LSD is seen now solely as a "fun" or recreational drug that leads to strange experiences. More new studies could be helpful in understanding the motivation for current use. The treated cases reported by Jacob *et al.* (1981) were mostly males under the age of 20 who were users of a variety of hallucinogenic and stimulant drugs. Some larger epidemiological study would be of considerable interest.

HALLUCINOGEN USERS IN TREATMENT

Users of hallucinogenic drugs appear rarely for curative treatment but often for emergency care when they encounter bad trips or toxic reactions. Most hallucinogens are not addictive, and they tend to be infrequently used even by devotees. Trends in admissions of hallucinogen users to treatment do not seem to be consistent.

Clark and McKiernan (1981) reported a slight increase in proportion of crisis contact involving LSD (10% in 1977 and 14% in 1978). However, there was a slight decrease (5% to 3%) in cases involving other hallucinogens. There was some indication that more of the hallucinogen users coming to the crisis centre in 1978 had psychiatric disturbances.

Data from the Addiction Research Foundation emergency services show an increase in the proportion of their cases involving LSD: from 1.8% in 1976 to 3.5% by 1981. Admissions for problems related to PCP also increased from 1.0% of all cases to 2.4%.

SUMMARY

The term "hallucinogenic" refers to many drugs with effects on mood, cognition, and perception. The important hallucinogenic drugs in Canada are LSD, PCP, and MDA, of which LSD is by far the most important. The main effects of LSD are on sensation, mood, and intellectual activities. PCP has greater tranquillizing effects—users appear "zombie-like." MDA has stimulating as well as mild hallucinogenic effects. All three drugs have frequent and serious adverse consequences, including bad trips, prolonged reactions, and tolerance.

Use of hallucinogens reached a peak in Canada in the late 1960s to early 1970s and declined thereafter. However, that use is currently very

high among student populations is clearly reflected in arrest statistics. Early studies of known users showed that they were mainly middle-class males from hippie communities. New studies of hallucinogen users, especially of MDA and PCP, would be valuable. Data on admissions of users to treatment is inconsistent with considerable increases seen in Ontario but not in Alberta.

Glue, Solvents, and Vasodilators

Almost since the industrial revolution began, there have been organic solvents and glues which have toxic effects when inhaled. The glues are those used for attaching plastic parts in model building, for tile-setting, and numerous other purposes. Glues and solvents contain organic non-alcoholic liquids called volatile hydrocarbons, which are produced from petroleum and natural gas. They have low boiling points and evaporate rapidly at room temperature or higher. Solvents are used in numerous industrial and household products including certain cleaners, paint thinners, fuels, and polishes. The most commonly used substances for inhaling for recreational purposes include:

- *Glues and cements:* The most commonly used plastic cements containing volatile hydrocarbons include model airplane glue (containing toluene) and plastic tile cement.
- *Nail polish removers and thinners:* Nail polish removers contain acetone, benzene, and alcohol and evaporate rapidly. Lacquer and paint thinners contain naphtha, perchlorethylene, trichlorethylene, and carbon tetrachloride.
- *Lighter fluid and cleaners:* Various lighter fluids and cleaners contain naphtha, perchlorethylene, trichlorethane, and carbon tetrachloride.
- *Anesthetics:* Occasionally anesthetics such as ether, chloroform, and nitrous oxide ("laughing gas") are used for thrill-seeking. Because of their low availability, their use seems to be rare now, although both ether and laughing gas were very popular at one time.
- *Gasoline:* Regular gasoline can be sniffed to create an intoxicating effect. It contains naphtha and benzene and may contain toluene or tetraethyl lead.
- *Aerosols:* Many products such as deodorants, hair sprays, insecticides, cough medications, and lacquers are packed in disposable

cans with a compressed gas to spray the product in fine droplets or aerosols. Some aerosols contain hydrocarbons.

- *Vasodilators* or “poppers,” sold as odorizers or incense, containing butyl nitrite or amyl nitrite. They are prepared in glass ampoules, which are broken so that the contents can be sniffed. Originally, they were developed to relieve the pain of angina pectoris.

Of course, many people, especially those working in paint factories, tanneries, garages, or refineries, encounter some of these substances at work and inhale the fumes accidentally. Here we are concerned with those who use solvents for pleasure or intoxication.

Solvent users employ many methods to take these substances. A tube or more of glue may be squeezed into a plastic or paper bag and inhaled deeply. Nail polish removers may be inhaled directly from the bottle or from a rag or paper napkin. Gasoline may be directly inhaled from the tank or siphoned into another container. In the past, ether was drunk by the spoonful (O’Connell, 1965), with intoxication resulting from its rapid evaporation in the stomach; however, it and other anesthetics are usually inhaled as vapors.

Currently, solvent or glue sniffing is not illegal except in a few areas in Canada. Some juvenile courts, especially in Ontario, have decided, that solvent or glue sniffing is evidence of juvenile delinquency.

THE EFFECTS OF GLUE AND SOLVENTS

The effects, as with other psychoactive drugs, depend upon the amount of glue or solvent used, the past experience of the user, and even the presence of other people. Solvents and aerosols enter the bloodstream quickly and affect the brain and other parts of the central nervous system. Many body functions such as breathing and heart rate are depressed. Some solvents and aerosols also affect the liver.

Most of the psychological effects are quickly felt and dissipated within a few minutes after a brief sniffing session. However, effects could last for several hours after prolonged sniffing. Users have a feeling of euphoria and exhilaration, and some may have vivid fantasies. Deep inhalation results in a state not unlike alcohol intoxication, marked by disorientation, slurred speech, muscular incoordination, staggering, and eventually unconsciousness.

Inhalation of vasodilators or “poppers” is said (Israelstam and Lambert, 1979) to cause increased heart rate and headache with a flushing of the face and neck. The pleasant effects include a “high,” a loosening of inhibitions, a sense of improved sexual performance, and

feelings of warmth and happiness. These effects dissipate within one or two minutes. As vasodilators are often taken with cannabis or alcohol, it is often difficult to identify which drugs are causing which effects.

Making general statements about the effects of glues and solvents is very difficult, since the group of substances is highly diverse. Some solvents have distinct toxicological effects not shared by others, and others have effects which are not well understood.

HARMFUL EFFECTS OF GLUE AND SOLVENTS

Sniffing, especially of glue, has resulted in many fatalities, either because the solvent depressed the heart rate or created an abnormal heart rhythm. Suffocation can also occur if a bag remains over the user's nose and mouth during a stuporous episode. There have been reports (Malcolm, 1969) of impulsive, aggressive, and risky behavior such as attempting to fly from a roof during glue intoxication. Explosions and fires involving gasoline, ether, and thinners have also been reported.

Long-term effects of solvent use include pallor, fatigue, tremors, weight loss, and irritability in addition to physiological problems. Some studies (Malcolm, 1969) have shown effects on bone marrow, but others have not. Kidney and liver damage observed with some solvents seems to be reversible after sniffing has stopped. Permanent brain damage seems to be unusual except in very heavy users, but disturbed functioning such as ataxia (incoordination) and memory loss is not unusual. Lead poisoning has been described in several Canadian cases of gasoline sniffing (Boeckx *et al.*, 1977), one of which resulted in death.

Fornazzari *et al.* (1982) recently reported one of the first studies of cortical and cerebellar impairment in toluene users. They studied 24 young people who had been daily users of toluene for at least a year. All but three were males. Marked neurological abnormalities were found in 14 of the users and impaired memory in five. The 11 users who were studied for a period of two weeks showed little improvement of the impairment. However, since there was no relationship between impairment and length or amount of toluene use, some third factor such as malnutrition or genetic differences may be important.

THE SHORT HISTORY OF GLUE AND SOLVENT USE

The first indications that glue was being sniffed for "kicks" or recreational purposes seem to come from the United States in the 1940s (Fernandez, 1978). Although by 1962 the inhalation of glue was common in some American schools, the first Canadian cases were reported

by Gellman (1968) as occurring in 1964. A Winnipeg pharmacist noticed a sudden increase in sales of nail polish remover to teenagers, who admitted that they were sniffing it "for kicks." In the same year a boy intoxicated from nail polish remover was found staggering around Winnipeg by police. There were no further incidents recorded until 1966, when a school principal reported groups of young people drinking soft drinks and sniffing nail polish remover. Several dozen cases were referred to the Winnipeg poison control centre in the next few years. During the mid-1960s, cases of glue sniffing occurred in most large Canadian cities and continued throughout the 1970s.

EXTENT OF GLUE AND SOLVENT USE

There are only a few recent estimates for the extent of inhalant use in Canada. Apparently, there is no recent national study available, and only a few high school studies and special studies have inquired about inhalant use. Typically, studies of adults and college students do not ask about glue or solvent use, for it is expected to be confined primarily to very young persons. Glue and solvent use has never been very common among Canadian youth in general, and it is far less popular than cannabis or LSD.

Table 13 shows the rates of use of glue and solvents in a variety of populations. The most recent data came from studies of students and teenagers in Ontario. The study of students in Ontario in 1981 indicated that 2.3% had used glue and 3.2% other solvents at least once during the previous year. The teenager study in Durham showed that 7.2% had ever used inhalants, 3.1% in the previous 12 months, but none in the previous month.

Fortunately, those who have used glue and solvents have never done so frequently. In the Ontario student survey for 1981, about 68% of users of both glue and solvents reported using them only once or twice in the previous year. All but 10% of glue users and 8% of solvent users reported having used them fewer than 10 times. Only 3.1% of glue users and 1.8% of solvent users had used them as often as 40 times in the previous year. This last figure represents only about 0.1% of all students, or about 1 in 1,000. Although these data give us little room for complacency, they do indicate that glue and solvents are much less frequently used than many other drugs—far less frequently than alcohol, tobacco, and cannabis.

Trends in glue and solvent use are mostly downward since the 1960s. The earliest study (of Toronto students in 1968) showed that 5.7% had used glue. This declined to 3.8% by 1974 and to only 2.3% (among Ontario students) in 1981. A somewhat similar trend is apparent for sol-

TABLE 13

*Studies of Glue and Solvent Use
in Various Canadian Populations*

Author	Type of population	Rate of use
Whitehead (1969)	students in Halifax (n = 1,604) 1969	3.1% used in past 6 mths
Russell & Hollander (1974)	students (grades 9–12) in Vancouver (n = 2,496) 1970	10.0% ever used (solvents only) 1970 10.6% ever used (solvents only) 1974 4.7% used in past 6 mths (solvents only) 1974
Annis & Watson (1975)	students (grade 9) in Timmins, Ontario (n = 88) dropouts (n = 827) non-dropouts	17.0% initial interview dropouts (glue or other solvents) 0.0% follow-up dropouts (glue or other solvents) 7.0% initial interview non-dropouts (glue or other solvents) 0.0% follow-up non-dropouts (glue or other solvents)
Bakal <i>et al.</i> (1975)	students (grades 7–12) in rural Alberta (n = 8,967) 1971 (n = 7,704) 1974	5.8% used in past 12 mths glue 1971 10.8% used in past 12 mths other solvents 1971 5.0% used in past 12 mths glue 1974 10.9% used in past 12 mths other solvents 1974
Smart & Fejer (1975)	students (grades 7, 9, 11, and 13) in Toronto (n = 6,447) 1968 (n = 6,890) 1970 (n = 6,641) 1972 (n = 3,479) 1974	5.7% used in past 6 mths glue 1968 ? used in past 6 mths other solvents 1968 3.8% used in past 6 mths glue 1970 6.3% used in past 6 mths other solvents 1970 2.9% used in past 6 mths glue 1972 6.5% used in past 6 mths other solvents 1972 3.8% used in past 6 mths glue 1974 7.4% used in past 6 mths other solvents 1974

TABLE 13 (continued)

Author	Type of population	Rate of use
Liban & Smart (1980)	Indian students (grades 7-13) in Ontario (n = 64) 1979	4.8% used in past 12 mths glue 6.3% used in past 12 mths glue (matched group of non- Indians) 6.3% used in past 12 mths other solvents 7.8% used in past 12 mths other solvents (matched group of non-Indians)
Smart & Blair (1980)	household sample in Durham, Ontario, teenagers 14-18 (n = 292)	7.2% ever used inhalants 3.1% ever used in past 12 mths inhalants 0.0% used in past mth inhalants
Smart <i>et al.</i> (1981a)	students (grades 7-13) in Ontario (n = 4,687) 1977 (n = 4,794) 1979 (n = 3,270) 1981	3.9% used in past 12 mths glue 1977 6.6% used in past 12 mths other solvents 1977 4.3% used in past 12 mths glue 1979 6.2% used in past 12 mths other solvents 1979 2.3% used in past 12 mths glue 1981 3.2% used in past 12 mths other solvents 1981

vents, with about 6% or 7% reporting use throughout the 1970s and a significant recent decline to only 3.2%. Glue and solvent use is one of the very few types of drug use actually showing a significant declining trend in the study of Ontario students.

Data from the poison control centres on voluntary inhalation of volatile substances provide some indication of cases requiring hospital treatment (table 14). As would be expected from the survey data, the peak number of cases occurred in 1970 and 1971, and since then the trend has been downward. Unfortunately, up-to-date statistics cannot be assembled to be comparable to those for 1970-75.

Fewer than 10% of the poisoning cases seen in poison control centres were aged below 10 years. Most were said to be in the 10-to-24 group (about 80%), which is a wide age range when examining drug use; we cannot be sure how many are young teenagers, as the age category is not further differentiated. However, about 4% of cases seen since 1970 have been aged 25 or over. Surprisingly, there seems to be at least a small group of older solvent users about which we know very little. Some study of this older population would certainly be of interest.

CHARACTERISTICS OF GLUE AND SOLVENT USERS

As with most drugs, glue and solvent use is far more common in some groups than in others. While there is not much difference between sexes in overall use of glue, males typically show somewhat higher use for solvents (3.4% males and 2.9% females among Ontario students). The major difference is for age, with about 3% of Ontario students under 15 using glue and 5% using solvents, but virtually none of those 18 and over (0.1%) reporting any use. Among Ontario grade 5 students in 1981, 6.5% had used glue and 12.9% other solvents in the previous year—rates several times as high as in any other grade.

As expected, rates of use are more than twice as high among dropouts than non-dropouts in the study by Annis and Watson (1975).

A special study has been made of students who reported glue sniffing in the 1981 Ontario survey. The data are shown in table 15. Most (78%) light and heavy users were under the age of 15 and in grades 7 and 9. There were almost no light or heavy users in grade 13. Light users included males and females in about equal numbers. However, *all* heavy users were male. That all heavy and most light users reported passing grades in school indicates that they need not be multi-problem children, at least where school is concerned.

The information on use of other drugs by glue users is especially interesting, although it should be noted that the actual number of heavy

TABLE 14

*Cases of Deliberate Inhalation of Volatile Substances
as Reported by Poison Control Centres,
by Age, 1970-1975*

Year	Age				Not known	Total
	0-4	5-9	10-24	25 +		
1970	8	8	124	4	9	153
1971	7	5	142	6	9	169
1972	1	5	103	2	11	122
1973	5	6	97	1	2	111
1974	0	3	64	4	2	73
1975	1	5	99	7	2	114

Note: Changes in reporting make it impossible to obtain comparable data for later years.

Source: Poison Control Statistics, 1970-1975, Health and Welfare Canada.

TABLE 15

*Characteristics of Glue Users in the 1981
Ontario Student Survey*

	Non-users	All users	Light users	Heavy users
Unweighted n	3,455	92	84	8
Weighted n	317,849	7,359	6,596	763
	%	%	%	%
Age				
13 and under	17.1	25.5	27.0	18.0
14-15	37.4	51.2	51.7	47.5
16-17	31.1	21.5	20.8	34.5
18 and over	14.4	1.8	0.6	0.0
Sex				
Male	52.7	58.2	49.4	100.0
Female	47.3	41.8	50.6	0.0
Grade				
7	17.0	27.8	29.0	18.0
9	39.3	51.3	51.7	68.0
11	29.5	19.2	17.8	14.0
13	14.2	1.7	1.5	0.0
Grade average				
80-100	20.3	12.1	8.9	71.3
60- 79	72.1	72.5	70.2	28.7
50 or under	7.7	15.4	20.9	0.0
Other drug use				
Tobacco	29.3	63.7	62.4	75.9
Alcohol	75.0	85.0	89.2	100.0
Cannabis	29.3	47.7	49.7	100.0
Solvents	1.8	63.7	63.2	79.5
Barbiturates (Non-Prescription)	7.2	36.5	39.3	84.2
Barbiturates (Prescription)	12.1	26.3	27.2	35.5
Heroin	1.0	15.5	18.4	38.0
Speed	2.5	21.5	25.5	56.8
Stimulants (Non-Prescription)	11.0	45.9	56.7	100.0
Stimulants (Prescription)	5.7	20.7	26.7	31.7
Tranquillizers (Non-Prescription)	4.3	24.7	28.2	74.4
Tranquillizers (Prescription)	7.2	19.9	21.4	31.7
LSD	9.7	27.3	28.7	84.2
Hallucinogens	4.2	19.4	23.8	49.6
PCP	2.0	17.9	20.4	47.8
Cocaine	4.3	23.0	23.6	63.7

Note: The percentages shown are based on weighted responses. "Light users" are those who have used nine or fewer times; "heavy users" are those who have used 10 to 40 times or more.

users in the group is very small. A majority (63.2%) of light and most heavy users reported the use of other solvents: hence the label "glue user" should be enlarged to "solvent user." Their use of other drugs depends on whether they are light or heavy glue users. Except for alcohol, tobacco, non-prescription stimulants, and other solvents, fewer than half of light users reported the use of most other drugs. However, their use of all drugs is much more common (up to 20 times) than that for non-users of glue. Heavy glue users are extensive users of many drugs as well as alcohol, tobacco, and other solvents. All reported the use of cannabis and non-prescription stimulants and almost all (84%) the use of non-prescription barbiturates and LSD. Heavy glue users represent polydrug users in the classic sense and are not exclusively or mainly glue and solvent users.

GLUE AND SOLVENT USE BY IMPOVERISHED YOUNG PEOPLE

Special studies of glue and solvent users seem to be rare. There are many references to the greater use of inhalants among impoverished young people, and it said that use "is most commonly associated with low socioeconomic status" (Wilkinson, 1978). However, studies of such populations are few in Canada. Gellman (1968) described the use of glue and nail polish among Winnipeg students but provided no indication of the characteristics of users. Lighter-fluid and gasoline sniffing were said to occur in northern Manitoba, but again there were few details. Boeckx *et al.* (1976) reported three cases of acute lead poisoning in an isolated northern town in Manitoba. They also stated that more than 50% of school children in another isolated community were currently or recently sniffing gasoline and had signs of lead poisoning from it.

Malcolm (1969) reported a small study of glue users in Toronto and found that there are three types involved. First, there are the rebellious, defiant, antisocial personalities with delinquent and truant backgrounds. They have a low tolerance for frustration and come from multi-problem families. Therapy with them is difficult, and recidivism rates are high. The second group includes anxious, troubled children whose glue use is symptomatic of deep emotional problems. They feel bored, rejected, and inadequate. In about 95% of the heavy sniffing cases, the father is absent physically or psychologically, as are about 50% of the mothers. Sniffers' families are also marked by considerable drinking of alcohol. The children sniff solvents in order to escape their anxiety and depression, and many become habituated. Malcolm also reported a third type—some normal children who try solvents because they are fashionable among their friends.

Several studies have shown that native Indian communities sometimes have high rates of solvent use, especially gasoline. It should be

noted that Indian communities were selected for study not because they were representative but explicitly because they were thought to have high rates of solvent use. Liban and Smart (1980) reported that Indian students had far higher rates of glue and solvent use than non-Indian students in an overall comparison. However, the difference vanished when the groups were matched for age, sex, and socioeconomic status.

Poplar Hill, a small Indian village in Northwestern Ontario, was studied by Lynn (1973). The village was a poor one with almost no real employment; most income was derived from welfare or Mother's Allowance. Gasoline was often taken from boat tanks and sniffed, especially by young boys aged 8 to 14. Of 49 people interviewed, only seven were non-sniffers, 23 were occasional sniffers, and 11 were frequent sniffers (the remaining eight were not classified). Generally, there was little concern about gas sniffing or lead poisoning in the village— even among parents, some of whom sniffed themselves.

A similar study was made by Angle and Eade (1975) of two native communities in Quebec. They interviewed some 564 Cree and Inuit residents and tested them for evidence of lead poisoning. Gasoline sniffing had disappeared from one village after a lead-poisoning death had occurred. However, sniffing was epidemic in the other village, with users often stealing gasoline from the many storage drums left lying about. It was estimated that 63 % of those aged 6–18 sniffed gasoline or naphtha. Most adults under 30 had also done it in the past. The reasons appeared to be the high availability of gasoline, the cultural disintegration of old native ways of life, the community support for intoxication as a pastime, and the lack of recreational and cultural facilities for young people.

“POPPER” USE AMONG HOMOSEXUAL GROUPS

An interesting craze for “poppers” or vasodilators with the alluring trade names “Locker Room” and “Rush” has been described by Israelstam *et al.* (1978). They surveyed some 70 people (66 men, four women) who frequented homosexual bars, clubs, and steam baths in Toronto. They found that 63 of the 70 used “poppers.” The users were all males in the age range 19 to 50 with a majority aged 22 to 30. They were mainly middle class. Most stated that they used “poppers” several times a week, with several sniffings on each occasion. The main reasons for taking “poppers” were to create a “high” for the greater enjoyment of dancing and music or to improve sexual performance.

WHAT CAN BE DONE ABOUT GLUE AND SOLVENT USE?

Glue and solvents present a novel and difficult problem among all

kinds of drug abuse. Sniffing is the province of quite young children, and not many children at that. Fewer than one in 1,000 are heavy users, and only two or three in 100 are users in even the broadest sense. There are indications but little proof that the practice is greater in isolated northern and Indian communities.

The drugs are cheap and readily available, and in most places their use for "kicks" or recreation is quite legal. Although heavy use may be interpreted by juvenile courts as "delinquency," that could not much dissuade users who are over 16—the most common age for achieving adult status before the courts in Canada. There are a few possibilities for prevention: they include legal controls, modifications of the ingredients of glue and solvent products so that they cannot be inhaled deeply, social and community programs, therapy for heavy users, and educational programs in schools or other situations.

Glue and Solvents and the Law

Legal controls on glue and solvents are of questionable value. The sale, advertising, labeling, and importation of these substances is regulated under the federal Hazardous Products Act, which does not restrict their sale, possession, or use in any way. The act makes no attempt to restrict their use as intoxicants. In practice, it is extremely difficult for authorities to regulate the use of a substance that is sold legally, especially when the purchaser/user is raising no complaint. Nor are they able to act even when a third party draws the use to their attention. By contrast, in the case of an illegal drug such as cannabis, the police detect use during the course of investigation of trafficking, sales, or possession. Only one province—Alberta—has prohibited recreational use of glue and solvents, under the provincial Public Health Act. The act forbids the inhalation of substances for the purpose of inducing euphoria, hallucinations, or intoxication or the distribution of products for those purposes, with a maximum fine of \$100 on conviction. In fact the law is seldom used, and there have been very few convictions under it.

Interpretation of glue and solvent use as evidence of juvenile delinquency seems to depend upon the locale and the individual magistrate. For some time, a magistrate in Toronto did make this interpretation, but other magistrates did not always agree. A study made by Caldwell and Erickson (1977) of how cases are handled in nine Ontario juvenile courts showed that few cases mentioned drugs of any kind, and none mentioned glue or solvents. Most mentions were about alcohol, misuse of prescription drugs, and cannabis. Drug use, moreover, was almost never presented as the central issue. Statistics concerning drug-related delinquencies in Canada show that they represented only 2%–3% of all delinquencies (Statistics Canada, 1979) over the past five years. More than 90% of the cases involved cannabis; cases involving glue and solvents are apparently rare.

Vasodilators or "poppers" could be easily banned or made prescription drugs, as they have few legitimate purposes. At least two states (Connecticut and Massachusetts) have banned sales of butyl nitrite, and one (Georgia) has required that a prescription be written for it (Israelstam and Lambert, 1979). However, since it is not clear that these drugs have addictive liability or major adverse effects, new rules may be difficult to impose.

The prospects for legal control of glue and solvents appear to be poor. The use of legally sold substances is inherently difficult to regulate. Delinquency proceedings affect very few young people and none over the age of 18. If plastic glue were the only problem, its sale could perhaps be prohibited to minors or allowed only on written orders from parents. However, we have seen that most glue users are also solvent users. Solvents are far too numerous to ban or regulate successfully, including as they do so many ubiquitous and useful products such as nail polish remover, lighter fluid, paint thinner, and even gasoline. Merchants could be asked not to sell products to young people who may misuse them—but how are they to predict misuse? Extra efforts could be made in northern and isolated areas known to contain many solvent abusers, but these efforts would have to be persuasive rather than legislative.

Some persuasive efforts to limit access to glue and solvents have been made. In 1972 the Ontario Minister of Health wrote to all retail merchants in Ontario asking them to limit the access of young people to solvents as a preventive measure. Unfortunately, we do not know how successful this appeal was, although surveys indicated a reduction in use starting from 1972 to 1974.

Improvements in Hazardous Products

Many changes are being made in the products which are typically inhaled to make them less dangerous or less attractive to solvent abusers. According to estimates made in 1977 (Wega, 1978), fewer than 20% of aerosol products in Canada contain fluorocarbon propellants, and those remaining are rapidly switching to non-fluorocarbons. Also, denaturants are being added to some glues containing toluene, acetone, and the like to prevent deep or prolonged inhalation (Fernandez, 1978). Many of these denaturants cause nausea or crying or carry a foul smell. Unfortunately, some have been found to cause cancer in rats or to release toxic fumes when heated. Naturally, the search for ideal denaturants has slowed, for they are as likely to affect legitimate users as sniffers and, if truly effective, would simply make many products unusable and unsalable. It is claimed (Fernandez, 1978) that "universal denaturing of all volatiles and the products that contain them is neither safe, nor practical, nor technically possible."

Some progress is, of course, being made, with the replacement of leaded gasoline by the unleaded type. As more and more cars appear requiring unleaded gasoline because of pollution controls, leaded gas will become rare and probably confined to certain farm vehicles and stationary motors. Unleaded gasoline may not reduce gasoline sniffing, but it will prevent some of the lead poisoning and the resulting central nervous system problems. However, Fernandez (1978) has noted that toluene, a hazardous substance in its own right, is often added instead of lead to keep the octane rating high.

Social and Community Programs

If simple technological or legal remedies cannot stop glue and solvent abuse, then more complex social and community approaches are necessary. Most communities have no significant problem, and the rate of use in the young population is low. Consequently, only communities with known solvent abuse are likely to support special programs. Such programs often involve getting merchants to restrict the sale of solvents and glue to adults only and to remove the products from open display (Wilkinson, 1978).

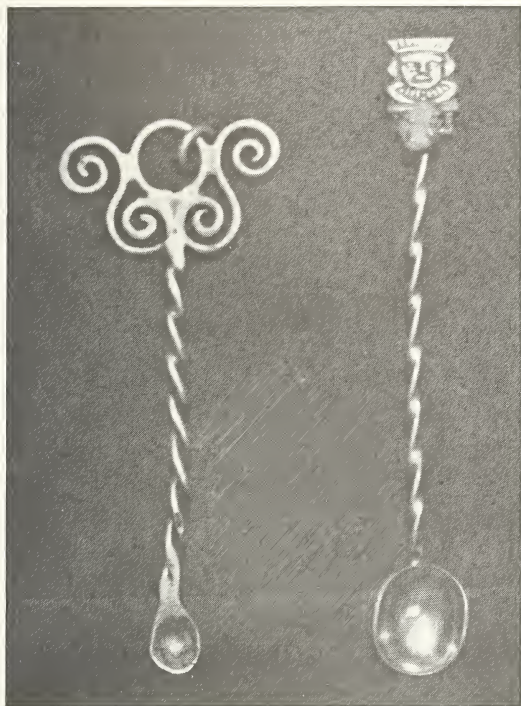
In some cases, special education programs may be mounted in schools. However, many people believe that publicity about solvent use helps to spread the habit (Gellman, 1968). So far, there seems to be no evidence that such programs can actually prevent use or abuse, and they carry the risk of educating susceptible young people about what solvents to use.

Wilkinson (1978) has suggested the use of a community development model for dealing with solvent abuse. First, community members get together to share information about the problem and resources to deal with it. An effort is then made to reduce the availability of the abused substances from retailers. Attempts are made to restructure the environment of identified abusers by providing alternatives to use (work, sports, hobbies) and to reduce the frequency of events leading to abuse (family disputes, school problems). Each identified abuser is assessed and given treatment or some peer-oriented counseling. This type of program would require considerable effort and organization, but if well done it could be very effective. So far, no trial for it has been described in any high-risk community.

SUMMARY

Numerous substances are available for sniffing which contain volatile substances: for example, glues, solvents, gasoline, thinners, aerosols, and vasodilators. All produce euphoria and exhilaration as well as intoxication. Effects disappear rapidly, but lead poisoning is a long-

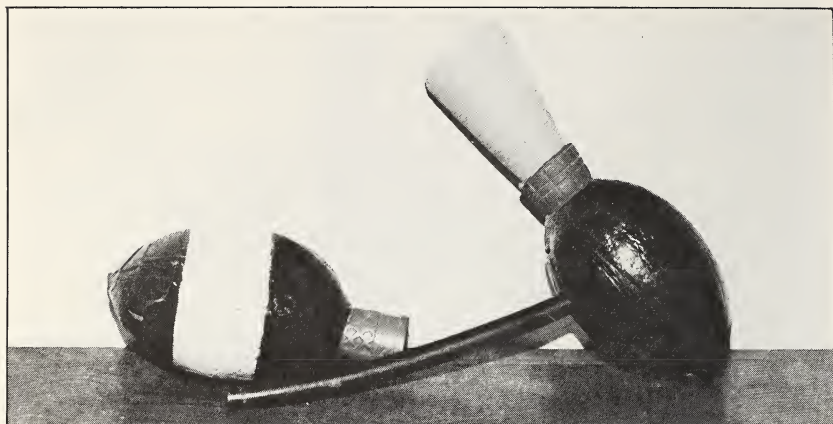
term risk, as is brain and liver damage. Solvent use seems to have begun in Canada only in the 1960s, and is still uncommon among general samples of students and other youth populations. However, sniffing, especially gasoline sniffing, has been very common in some Indian communities and in some isolated and impoverished communities. Solvent users are more often males and aged 15 or under; most are users of other drugs. Legal or educational methods of controlling solvent use have not been developed. However, special programs involving treatment for users, education, persuasion, and control of access to solvents should be helpful in high-risk communities.



1. Silver cocaine spoons from South America with a jade insert. They are used to measure the amount of cocaine taken in a small or large dose (about 50 mg and 200 mg). Cocaine could be sniffed directly from the spoons or via a straw into the nostrils. Cocaine may also be laid out with spoons into "lines" (1 to 2 inches long) and sniffed with a straw or paper tube.



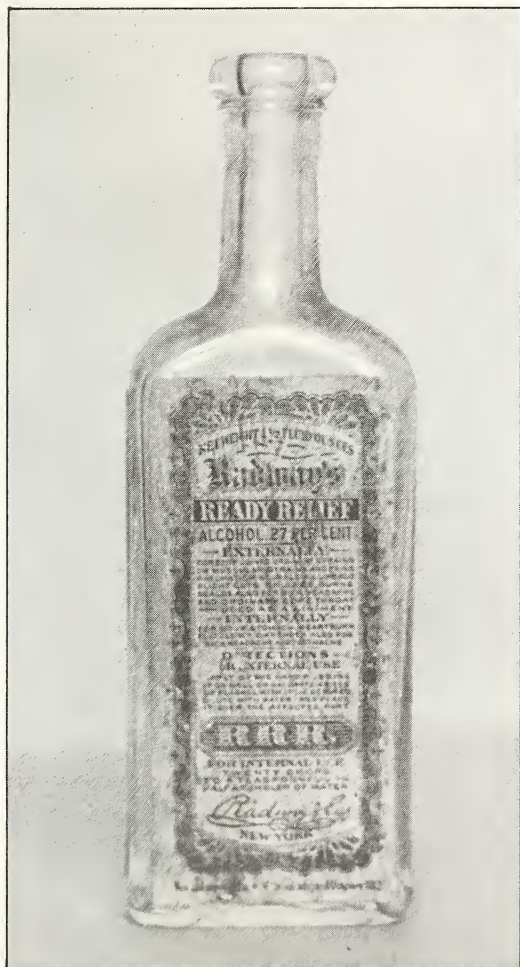
2. Allen and Hanbury's Throat Pastilles contained cocaine (1/20 gram) as did many specifics for colds and catarrh sold in the early 1900s. Cocaine provided no medicinal benefits but did act as a euphoriant and a stimulant. Cocaine may have had a temporary drying effect on sinuses and mucous membranes. It did allow sufferers to ignore the catarrh until the euphoria dissipated and another pastille was required.



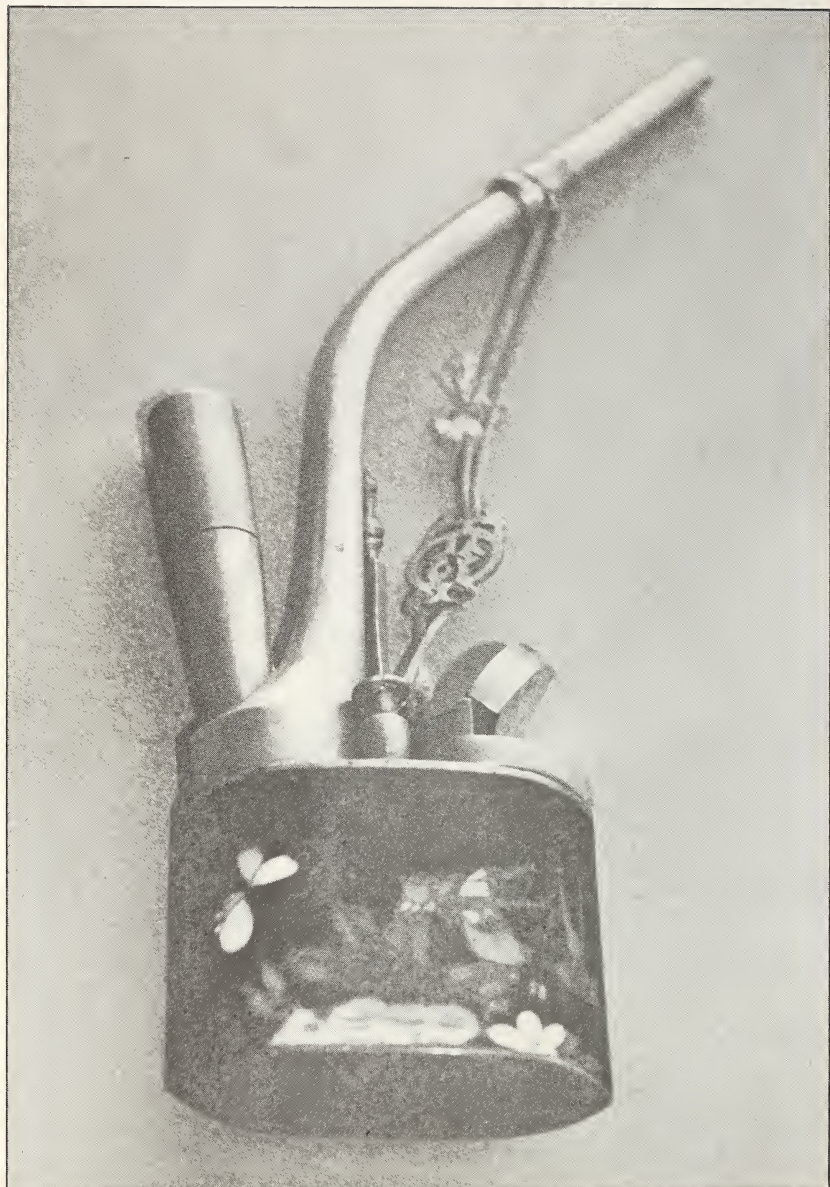
3. *These are Rastafarian ganja pipes from Jamaica. The bottoms, often brightly colored, are made of coconut shell and the tops are made of ceramic and are disposable.*



4. *Three choppers made of brass and probably from India. Those with curved blades were used to chop betel nuts which were later chewed for their stimulant effect. Those with straight blades were used for chopping hashish cakes.*



5. Radway's Ready Relief or "R.R.R." was known to generations as a cure-all and a relief for aches and pains. It contains 27% alcohol. At one time it was advertised as effective for "malarious complaints," cholera, pleurisy, pneumonia, spinal affections, dysentery, and paralysis. This bottle is of more recent vintage (1913) and claims effectiveness only for such minor complaints as sour stomach, heartburn, and sick headache. R.R.R. was sold through both Sears Roebuck and T. Eaton Co. catalogues and retailed in Canada for 18 cents in the early 1900s.



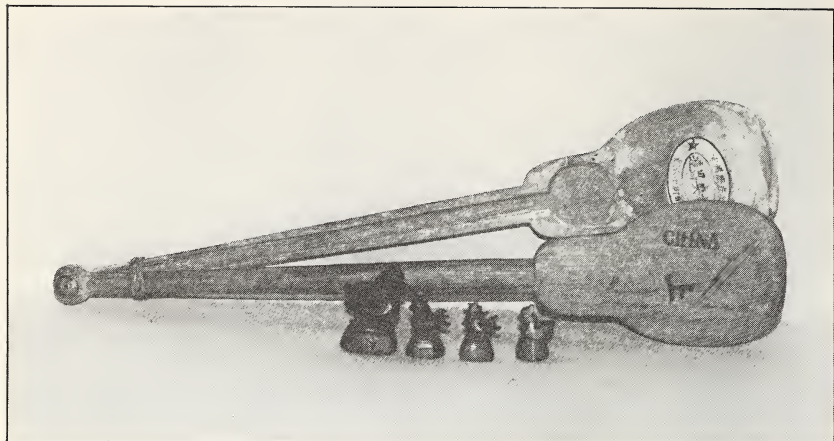
6. This is a water pipe with a pewter top and an enamel base showing flowers and butterflies. It is of the type made in Holland and sold in South East Asia for opium smoking. It probably dates from the mid-19th century.



7. *Rawleighs' Cold Tablets* were made in Montreal and Winnipeg and were sold for "La Grippe, Bronchitis, Cold in the Head, and neuralgia caused by malaria." They contained bromides which are cardiac and cerebral depressants. "Bromism" marked by headaches, inertia, and occasionally violent delirium, muscular weakness, and cardiac depression, was common until bromides were removed from over the counter preparations.



8. These bottles previously contained a variety of nostrums and home remedies for colds, aches, pains, tuberculosis, and even malaria. Most of them contained alcohol and stated it on the label (e.g., *Glyco-Thymoline 4% alcohol*) but little else of curative value. Many contained morphia or opium. For example, "Mrs. Winslow's Soothing Syrup" for teething children contained 1/10 grain of morphia per fluid ounce.



9. A set of opium scales from China with opium weights in the shape of roosters. The weights are probably of Thai origin. The scales were seized in Vancouver, B.C. in 1928 at the height of the efforts of police to suppress the opium traffic in Canada.

SECTION III

Efforts at Abuse Control and Prevention

Introduction

Although relatively successful in studying the nature of drug use in Canada, we are less successful at control or prevention.

Primary prevention includes efforts to dissuade users from ever starting drug use, through education, parental influence, or legal measures. Secondary prevention involves identifying and treating or otherwise changing users at an early stage so that they do not progress to addiction or dependency. Tertiary prevention is directed to those who are addicted or dependent so as to end or at least contain their drug use.

The chief means available for tertiary prevention are treatment and incarceration.

As well as explicit efforts at prevention, certain sociocultural factors predetermine whether some types of drug abuse will or will not be problems in the society. Some of these factors include availability of drugs, the motivation of the population to use drugs, and the existence of large dispossessed minorities prone to drug use.

In this section, attention is paid to the major methods of controlling drug abuse in Canada: national and international laws; drug education and persuasion; and the treatment of drug abusers. In addition, an analysis is offered of the sociocultural factors which have meant that Canada has a low rate of narcotics problems in comparison with the United States. Also, the role of parents in preventing drug abuse, identifying it at an early stage, and trying to ameliorate it is discussed.

National Laws and Their Preventive Effect

CONCEPTS OF LEGAL PREVENTION AND DETERRENCE

The prevention of drug abuse is often believed to depend upon the existence and the enforcement of laws controlling access to drugs. Such laws limit the manufacture, importation, distribution, and possession of most drugs for which there is an abuse potential. Of course, they carry penalties involving probation, fines, or jail terms. The main laws in Canada respecting drugs are the Food and Drugs Act, controlling most proprietary and patent medicines and psychotropic drugs, and the Narcotic Control Act, controlling opiates, cannabis, and cocaine. In legal quarters, these laws, especially the Narcotic Control Act, are viewed as extremely harsh, both in the penalties provided and in the way evidence is gathered for their enforcement. There is also evidence that the general public views laws for cannabis as too restrictive.

The history of allowing strict legal drug controls suggests that the Canadian people and their political leaders believe in “deterrence theory.” In its simplest form, “deterrence theory” states that people are discouraged from engaging in criminal behavior by the existence of strong laws with severe punishments. “Specific deterrence” refers to the effect that punishment will have in preventing a convicted offender from engaging in another crime of the same type. “General deterrence” occurs when the population at large is discouraged from criminal behavior—people know of the existence of strong laws with severe punishments and they expect to be caught. Deterrence is best where crime detection is very likely, penalties are stiff, and justice is swift.

Although all the evidence is not yet in, the evidence for a “general deterrence” effect of laws is weak (see Teevan 1976, for a review). People usually obey laws because of a general respect for law and for societal values. They do not want to be seen as criminals or deviants, and most have no motivation to be otherwise than law-abiding.

Some convicted individuals may also be "deterred" in the specific sense, of course. However, as we have seen from Erickson's study, *Cannabis Criminals* (1980), it is very doubtful that many cannabis users are deterred by a conviction. Also, it is well known that most heroin addicts return very quickly to addiction after a prison term (Duvall *et al.*, 1963; Vaillant, 1966; Richman and Humphrey, 1969).

Drug laws are also meant to decrease the availability of drugs—to dry up the supply so that people are not even tempted or, if tempted, cannot find the drugs. This aspect of drug laws has not been given as much publicity as deterrence. However, some research on the topic has been done in Canada.

In general, addictive drugs seem to be relatively hard to find in Canada as compared to many other countries. Recently, a study was made for the World Health Organization (Smart and Murray, 1981) of drug availability and legal controls in some 23 countries. While it is difficult to get exact measures of availability in different countries, some indication can be gained from knowing whether drugs are cultivated or manufactured locally and whether they are controlled by a prescription system. Table A-2 in the Appendix shows the results. In Canada, only cannabis is cultivated. Although psychoactive drugs are not manufactured, there is some repackaging of imported products, and sales are controlled by a prescription system. Availability of drugs in Canada is less than in most other countries of the 23 studied.

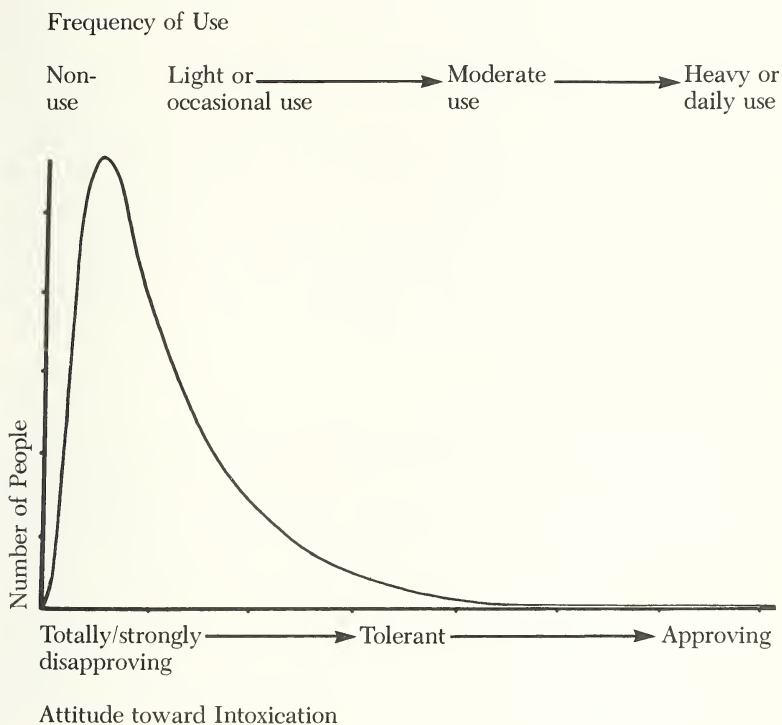
There are many indications that more drug use occurs in populations where drugs are easy to get. Physicians, pharmacists, and nurses have higher rates of drug abuse than the general population, presumably because drugs are accessible in their daily work. Opium farmers in many countries (e.g., Thailand, Iran, and Pakistan) have a high rate of addiction, although those in Turkey and Mexico appear to be an exception (Smart and Archibald, 1980).

A study was made in Ontario (Smart, 1977) of the availability of drugs and their usage. Students were asked how easy or difficult it was for them to obtain drugs. In areas where most people felt drugs were easy to get, there was more use of drugs such as cannabis, tobacco, alcohol, LSD, non-prescribed tranquilizers, and heroin. Availability of drugs was a significant predictor (but not the best one) for the drugs—cannabis, heroin, alcohol, and tobacco—but not for the other two.

Patterns of use and attitudes seem to be important factors to compare. Figure 1 represents a composite graph reflecting findings from several countries for several different drugs. It is important to understand that "light users," "moderate users," and "heavy users" are

FIGURE 1

*Pattern of Use vs. Attitude toward Intoxication:
A Composite of Findings*



somewhat arbitrarily defined categories in reported studies. In actuality, the categories blend in a continuum with no sharp demarcation between. Whitehead and Aharan (1974) also showed that peoples' attitudes to intoxication or "turning on" with drugs fell into the same pattern as use: a similarly shaped continuum from disapproving through tolerant to approving. Therefore, approaches to reducing overall drug consumption should also include attempts to change attitudes favoring drug intoxication. The similarity in patterns suggests that it may be necessary to modify attitudes toward any drug use, and reduce the number of drug users at the lower levels of use, in order to reduce the numbers with the potential to graduate to heavier levels of use.

These various studies do suggest that limiting access to drugs could reduce the number of users and the number with problem levels of use. It may be that attempts to reduce the number of drug abusers or heavy users without at the same time discouraging use at lower levels will be ineffective. Our drug-control laws should be seen in this light—limitation of access—as well as in the (relatively dim) light of their deterrence effect. Almost all our laws, after all, are designed to discourage drug use in general rather than heavy use alone.

CANADIAN LEGISLATION ABOUT DRUGS

In Canada, legislation about drugs is mainly in the federal rather than provincial jurisdiction. Of course, the British North America Act does not mention illicit drugs, and its creators probably gave no thought whatever to drug legislation. In practice, such legislation has usually originated with the federal government on the basis that measures for "peace, order and good government" and the criminal law are its territory (Le Dain, 1973). Certainly, the main drug laws are federal, including the Hazardous Products Act, the Narcotic Control Act, and the Food and Drugs Act.

Various provincial laws, termed "pharmacy acts," control the training, licensing, record-keeping, and other activities of pharmacists. These acts may seem to have little direct impact on the drug abuse problem; however, they do provide a framework for the tight prescription system in Canada and serve to control the possibilities for diversion of drugs from pharmacies. Probably we take the pharmacy acts too much for granted and tend to minimize their importance. Certainly, countries without such controls have numerous problems with the diversion of drugs from legal sources (Smart *et al.*, 1981c).

The Hazardous Products Act

The Hazardous Products Act of 1968–69 is not usually thought to be a piece of drug control legislation, but it could be strengthened. It

deals with consumer goods for household, garden, or personal use, including most of the hazardous solvents which are inhaled. At present it specifically excludes food, drugs, cosmetics, and pest control products. (Of course, inhalants are not officially "drugs.") The act sets out manufacturing, labeling, advertising, importing, and retailing standards for products such as "adhesives, cleaning solvents, thinning agents and dyes containing toluene or acetone." Labels are required which state their hazardous nature, and all products are subject to search, seizure, and analysis if found to contravene the law. The act does not prohibit any particular use of the products named once they are legally sold. However, if a special effort were desired to control inhalants or solvents, the Hazardous Products Act would be the only available federal law. Revisions could presumably be made to forbid the sale of inhalants to minors, or to require denaturing agents or the removal of lead. Of course, minors with legitimate uses for solvents would encounter inconvenience. Because the Hazardous Products Act is essentially a marketing rather than a health law, actually prohibiting the use of solvents for inhalation would be beyond its scope, as well as being difficult to enforce in practical terms.

The Food and Drugs Act

The Food and Drugs Act (1952-53) was constructed to control drugs which are sold for treatment of diseases or for "restoring, correcting or modifying organic functions in men or animals and disinfecting premises or controlling vermin." Under this act, drugs liable to abuse fall into two categories: "controlled drugs" and "restricted drugs."

"Controlled drugs" are those that may be obtained by prescription. The Food and Drugs Act requires that they be sold only by licensed manufacturers and distributors, who are required to have secure facilities for drug storage and to keep careful records of amounts bought, sold, or manufactured. The records are subject to regular inspection. Licenses are for one year, with no automatic renewal. The drugs may be handled only by qualified personnel. Sales to the public may only be by registered pharmacists on prescription from licensed practitioners (physicians, dentists, veterinarians) or from the practitioners themselves. Practitioners are allowed to prescribe these drugs for treatment purposes only.

Amphetamines and related stimulants are examples of "controlled drugs," as are barbiturates and other sedatives, tranquillizers, and medically used painkillers of the opiate type. Amphetamines can be prescribed only for very carefully defined purposes; however, prescription of other types of drugs is less stringently regulated. Prior to 1966, vast amounts of amphetamines were imported into Canada (1,040 kg in 1966), chiefly for appetite control and for treatment of depression and apathy. By 1970, the amount had dropped considerably (308 kg). In 1973, the Food and Drugs Act was changed so that amphetamines could

be prescribed in humans only for narcolepsy, hyperkinetic disorders in children, minimal brain dysfunction, epilepsy, or hypotensive states associated with anesthesia. When the law was first changed, such drugs could be prescribed for only 30 days unless a second medical opinion was obtained, and the Health Protection Branch of the Ministry of Health and Welfare was to be informed of all prescriptions. These restrictions have been lifted. While prescribing of amphetamines has been drastically reduced because of the new rules, good medical practice seems to have suffered very little.

"Restricted drugs" are those that have no accepted medical use (such as LSD or MDA), and hence are not routinely available through pharmacies or medical practitioners. Some of the "restricted drugs" can be made available for research purposes. However, in practice, such drugs are extremely difficult to obtain for human research, and few people consider the effort worthwhile.

It is sometimes believed that the Food and Drugs Act is weaker or softer than the Narcotic Control Act. Indeed, proponents of "decriminalization" of cannabis use have often suggested that cannabis be put under the Food and Drugs Act. Its fate would depend greatly on which schedule it entered. First of all, the consequences of illegal possession are different. "Controlled drugs" are merely confiscated, whereas "restricted drugs" carry a penalty in addition: for first offenses, a fine of \$1,000 or six months' imprisonment (\$2,000 and one year imprisonment for subsequent offenses). If the Crown proceeds on indictment,¹ the penalty can be \$5,000 or three years' imprisonment. There are penalties also for trafficking in "controlled drugs" and for possession for the purpose of trafficking: on summary conviction, a maximum of 18 months imprisonment, and on indictment, 10 years. In addition, many of the same police investigatory powers apply to both the Food and Drugs Act and the Narcotic Control Act. The former act is thus not necessarily a less harsh place for cannabis offenses.

In general, the Food and Drugs Act seems to be a successful piece of legislation. Complaints about it are few. Diversion of drugs from legal sources (except for pharmacy break-ins and thefts from physicians) seems to be rare. Strengthening the act certainly helped to control the growth of amphetamine use in the 1960s. However, it has not yet been employed to control the great growth in tranquillizer use. Tranquillizers are rarely obtained illicitly or illegally imported. In fact, the latest BDD statistics show no convictions for offenses involving tranquillizers.

¹ Indictment tends to be the procedure for more serious offenses, and may involve a jury trial. For less serious offenses, the case is heard by a provincial judge, and the outcome may be a summary conviction.

The Narcotic Control Act

The Narcotic Control Act was proclaimed in 1961 by Parliament. It replaced the earlier Opium and Narcotic Drug Act, which dated back to 1920 but had been extensively revised, and which itself replaced the earlier Opium and Drug Act of 1911. The 1961 act controls essentially the same sort of "narcotics" which were covered under the older acts and is consistent with the list covered internationally under the Single Convention on Narcotic Drugs (see chapter 9). None of the acts uses any scientific or pharmacological definition of "narcotic," but simply lists the drugs covered. In practice, this mere listing has led to subjecting drugs which differ widely in effects and in popularity (for example, heroin and cannabis) to the same controls. As might be expected, much public and legal outcry has concerned the poor decision to include so many things in "narcotics" law. The law currently covers cannabis in all its forms; all opiates, whether natural, semisynthetic, or wholly synthetic; and coca and its derivatives, such as cocaine. That is, some narcotics, some stimulants, and some euphoriant are covered in the Narcotic Control Act. There are currently 89 specific drugs listed in the 1961 act.

The act is complex, but basically it provides for the control of the listed drugs among the public at large. It specifies penalties for illegal possession, for possession for the purposes of trafficking, for trafficking, for importing and exporting, and for cultivation in the case of opium and cannabis. It allows police special powers to enter and search premises other than dwelling houses to enforce the act, and it allows personal searches to be made without prior arrest. Entering and searching residences involves "writs of assistance," about which more later.

The 1961 Narcotic Control Act is stricter in some respects and weaker in others than the version which preceded it (Narcotic Control Act, 1954). It did away with such offenses as opium smoking, as the practice had died out in Canada. However, sending drugs through the mails was also removed as an offense without any sign that the problem had been solved. It also removed whipping as a penalty for any offense, the six-month minimum for possession, and the provision that all occupants of any dwelling house were legally "in possession" of drugs found there. Most important, restrictions on the right of the medical profession to prescribe drugs to addicts were lifted. These restrictions had virtually prevented any development of treatment facilities for addicts. Not long after, facilities were established in both British Columbia and Ontario, and the whole approach to treating addiction in Canada changed. Regulations were written which allowed physicians to administer narcotics to addicts if that was thought to be good medical practice. Standards for such practice were soon developed.

Penalties for many offenses were changed with the 1961 act, and what we have currently is the following:

	<i>Minimum</i>	<i>Maximum</i>
Possession (summary conviction)	none	\$1,000 or 6 months' imprisonment or both for first offense; \$2,000 and/or imprisonment for 1 year for subsequent offense
Possession (indictment)	none	life imprisonment
Possession for purpose of trafficking	none	life imprisonment
Trafficking	none	life imprisonment
Cultivation	none	7 years
Importation/exportation	7 years	life imprisonment

At present, for trafficking, life imprisonment is thus a possible penalty (in effect 14 years maximum), although it has rarely been imposed in practice. The most important change, however, was the introduction of a seven-year imprisonment as a *minimum* sentence for importing (with life imprisonment a maximum). This is one of the heaviest minimum sentences which can be imposed in Canadian law. It has been criticized as unduly harsh and as taking away from magistrates the discretion which they traditionally exercise. The seven-year minimum for importing must be applied regardless of whether the amount of drug is large and whether the drug is very dangerous or not; that is, it applies equally to a few grams of cannabis and to several kilograms of heroin. It also applies equally to first offenders and recidivists. Doubtless the law was meant originally to dissuade people from importing heroin. However, a number of people have been given long sentences for importing small amounts of cannabis. Many voices have been raised against this part of the act. When it is revised, the seven-year minimum, at least for cannabis, may well be changed.

The Narcotic Control Act, 1961, contained a controversial Part II, which has never been proclaimed and probably never will be now. This section allowed for "preventive detention" in a penitentiary for an indeterminate period of time and for compulsory treatment in an institution operated under the Penitentiary Act, again for an indeterminate period. There was provision for provinces to establish custodial treatment for addicts as well as for the federal government to do so. Why the section never came into force is unknown. It has been speculated that treatment centres would have been too costly (especially since effective treatments were unknown) and would in any case have been outside the

federal government's jurisdiction. (Constitutionally, treatment and health matters are in the provincial jurisdiction in Canada.)

PREVENTING DRUG ABUSE THROUGH LEGAL MEANS IN CANADA

Questions are often raised about the value of strict laws in preventing and controlling drug abuse. People often wish to know whether they "work" or not, or "what works best." Evaluating the impact of any legal change is difficult. Legal changes are often complex in that many provisions are changed at the same time—as with the 1961 Narcotic Control Act. Also, enforcement can be very strict or very lax depending upon the attitudes of police and the judiciary and upon the personnel resources assigned to enforce the law, such as special drug squads or task forces, special courts, and the like. There is also little clarity about what laws are supposed to do. Are they to prevent people's first drug use, or only continued use? Are they to prevent all drug use, or only "problem" use or "chronic" use? Are they to prevent access to drugs or to persuade people not to use them even if access is possible? Even when all these problems are considered, it is important to examine how effective drug laws have been in controlling drug use and the attendant problems.

What can be said about the control of drug use by legal means in Canada? Do we have evidence of real success in any areas? There are a few areas in which some success can be clearly seen and several others, notably cannabis legislation, which are most unsuccessful.

One of the greatest successes must be the control of opium use in the 1920s. During the 1920s, penalty provisions were greatly increased for opium offenses: for example, starting in 1922, convicted aliens could be deported, maximum penalties were raised from \$500 (in 1911) to \$1,000 and seven years in jail, and minimum penalties were raised to \$200 and six months in jail. In 1922 there was a mandatory imprisonment for the first time, plus the provision of whipping for selling to minors. That decade saw a very great reduction in convictions under the Opium and Narcotic Drug Act—from 1,866 cases in 1921 to fewer than 200 by 1931. It is difficult to be certain which provisions were most important, but probably those allowing mandatory imprisonment and deportation were especially effective.

[A second success has already been mentioned—the restriction on amphetamine prescribing in 1973. It is virtually certain that this legal change has greatly affected the use of amphetamines obtained both on prescription and illegally. The importation of amphetamines fell drastically, from 789 kg in 1971 and 1972 to 3 kg in 1973 and 1974 (Smith, 1981b). Also, users of speed in the Toronto school population fell

from 4.5% of the population to 2.7% from 1970 to 1974, and similar but smaller decreases were found in the use of other stimulants. In addition, speed users, once a common sight at treatment centres for drug abuse, almost disappeared. It should be noted, though, that research from a variety of countries (see Smart, 1975, for a review) shows that increased controls on legally available drugs are more likely to be effective than are controls on illegal drugs. It is much easier to affect manufacturers and distributors of legal drugs, who have a license and a profession or business to maintain, than it is illegal drug traffickers, all of whose activities are hidden.

A major failure from almost any point of view must be the strict cannabis laws in Canada. They appear to have neither a general nor a specific deterrent effect, and they generate considerable hostility on the part of young people. We know that cannabis users have increased by a factor of four or five in the past 10 years, so that a claim that the law had deterred users could not be supported. Also, Erickson's study (1980) of convicted "cannabis criminals" showed no effect on their use of cannabis. We know, of course, that fewer than 1% of cannabis users will ever be caught by police, and hence we should not expect much deterrent effect. As the provisions of the law were softened—for example, proceeding by summary conviction, reducing the likelihood of jail as a penalty, and allowing absolute discharges—conviction rates have actually gone up (Erickson and Smart, 1980).

Not only does the cannabis law not deter, it has many unpleasant side effects. In some areas of the country, young people are still being sent to jail for cannabis possession and many others are being processed through the courts with lesser penalties. As a result, at this time there is very little support for the cannabis laws among either cannabis users or the general public. A survey made by the Gallup Poll in 1978 indicated that only 34.2% of Ontario adults agreed with the present laws. The remainder thought that possession of cannabis should be punishable only by fines (13.0%), that possession of small amounts should be legal (20.6%), or that government should license stores to sell cannabis (24.1%). The smallest amount of support for the current law was found among university graduates, young people (aged 18–29), and males.

We know little of how a conviction for cannabis use affects the employability or educational opportunities of young people, but the effects must be negative. At least some must have problems getting jobs requiring bonding, being admitted to licensed or professional training, or obtaining passports or visas. Especially when viewed against the lack of deterrence, all of these problems seem not worth the effort involved in applying the present cannabis laws on possession.

SOME UNRESOLVED SOCIO-LEGAL CONTROVERSIES

As in most countries, there are a number of socio-legal controversies about Canadian drug laws. Questions have often been raised about the strictness of such laws, about the need for compulsory treatment, and about the need for changes in the laws concerning cannabis possession. Although each of these problems has been alluded to earlier, it is of interest to summarize and define just what the current problems are.

Strictness of Drug Laws

There can be no doubt that Canadian drug laws reflect a "law and order" rather than a "civil rights" position such as in the United States. The emphasis is on enforcement of unusually strict penalties and not on protecting the rights of citizens at large or the accused. A number of examples in the drug laws reflect this position. Reference has already been made to the high minimum penalty for importing (seven years): only murder and treason have higher minimum penalties.

Writs of assistance are also a controversial legal mechanism. They are issued on a virtually career-long basis to individual police officers and carry with them unusual powers for search and seizure. At the time of writing, the Solicitor General of Canada is attempting to increase the number of such writs, although they have often been criticized by legal experts (for example, Cook, 1969a, 1969b; Solomon and Green, 1981). There have also been private members' bills presented to Parliament to ban writs of assistance. Currently there is no requirement to explain the need for the use of writs before a magistrate, and hence no real review of their usage. Apparently, these writs can be used in cases involving all customs and excise matters, but they seem to be used mainly for the investigation of drug cases. Of course, most of those cases turn out to be for possession of cannabis rather than trafficking in opiates.

The drug laws also allow a type of presumption of guilt until innocence is proven. The charge "possession for the purpose of trafficking" requires that the accused prove in court that the drug was *not* for trafficking and only for personal use. The accused in effect must demonstrate that the amount is one that could be reasonably consumed in a short period of time, usually a few weeks or months. The possession charge also requires the accused to show that the drug was for a legal purpose, not the Crown to show that the purpose was illegal. When these provisions were introduced (in 1954), the major drugs of abuse were opiates—especially heroin; doubtless the aim of Parliament was to provide strong means of controlling them. No one could have foreseen in 1954, when the "possession for the purpose of trafficking" provision was

added, that it would be used against thousands of otherwise law-abiding young cannabis users each year.

Although Canadian drug laws were made slightly less strict over the years, they remain very restrictive in penalties but not restrictive at all in procedures allowed to the police. Comparisons with laws in other countries are difficult to make, because of varying historical and social factors. However, the study made for the World Health Organization (Smart and Murray, 1981) of laws in various areas of the world provided some information for 17 countries. (Table A-3 in the Appendix shows the maximum penalties for possession, trafficking, and importing in 17 countries.) Canada does *not* have the largest penalties for any of the offenses. Death is the maximum for trafficking and importing in the Philippines, Nigeria, and Singapore. Several countries have a maximum of 12 years for possession (Argentina, Philippines) compared to Canada's seven years. However, taking the three offenses as a whole, Canada is well above average in the severity of maximum penalties allowed.

Just how the harshness of current Canadian cannabis laws will be modified is uncertain. Probably the best prospects are for modifying penalties for cannabis possession and lowering the seven-year minimum for importing.

Drug Laws and the New Canadian Constitution

While this chapter was being written, the Constitution Act, 1982, containing the Charter of Rights and Freedoms, was being proclaimed by the Queen in Ottawa. As with the British North America Act, drugs are not specifically mentioned. However, the Charter of Rights seems to promise changes in how drug laws are interpreted and applied in Canada. For example, it is stated that "everyone has the right to life, liberty and security of the person and the right not to be deprived thereof except in accordance with the principles of fundamental justice." This provision could well signal an end to the use of writs of assistance, for they are not used in other countries and seem to violate fundamental justice. The same is true of the promise that "everyone has the right to be secure against unreasonable search and seizure"; courts may decide that drug seizures made with writs of assistance violate this right.

Another right guarantees that "everyone has the right to be presumed innocent until proven guilty." This is clearly contravened by the Narcotic Control Act provisions on possession for the purpose of trafficking; there you are guilty until proven innocent.

Lastly, we are assured that "everyone has the right not to be subjected to any cruel and unusual punishment or treatment." The seven-year minimum penalty for importing may be overturned, for it is certainly unusual and cruel.

Just how the new Constitution will affect drug legislation and police activities is very difficult to say at present. It is recognized that many existing federal and provincial laws have provisions counter to the Charter of Rights. Some will be modified by Parliament in a planned way. Others will be left for the courts to interpret as test cases as controversial aspects of drug cases are revealed. Many changes may require decisions by the Supreme Court of Canada and take years to accomplish.² We may be sure that changes are coming because of the Constitution, but we cannot be sure what they will be or how quickly they will appear. However, liberalization of the laws and their interpretation is the sure result.

Decriminalization of Cannabis

There seems to be general recognition that the law respecting cannabis requires change in Canada, but there is little agreement about what should be done and how. Changes were recommended by the Le Dain Commission on the Non-Medical Use of Drugs in the early 1970s. Public opinion seems to favor change. All political parties have said that they want change, and indeed many proposals have been brought forward. Virtually every Canadian Parliament in the last five years has been told that new legislation about cannabis will be presented, but it has never appeared. One problem is that the government wishes to soften the legal penalties, especially for possession and importing, without appearing to approve the use of cannabis. Also, much of the impetus for changes in cannabis laws began in the early 1970s when there was little knowledge of its harmful effects. Since that time evidence has rapidly accumulated about a wide variety of harmful effects (ARF/WHO, 1981).

It has been shown that reductions of penalties for possession in the United States to small fines has not led to an increase in cannabis use (Single, 1981). However, we cannot be sure that the same results would obtain in Canada. Cannabis use is at a lower level here than in the United States. Canadians might be more prone to listen to a message from the government—even such a vague message as “Cannabis does not need as large a penalty as it did in the past.”

Whatever the decision eventually taken, there are several options open to any government which considers changing the cannabis possession law. These options have been very well described by Single *et al.* (1980), and their paper should be read by interested students of the problem.

² In January, 1983, the Ontario Supreme Court declared the “reverse onus” clauses of the Narcotic Control Act to be invalid on constitutional grounds. Appeal will be made to the Supreme Court of Canada for a final ruling.

The Options for Cannabis

Leave the Law As It Is

"No change" is probably the least attractive of all options, but it has been relied upon so far. It was argued earlier that the current law criminalizes large numbers of users and is unfairly applied in that penalties are inconsistent. It is very doubtful whether there is any deterrent effect. Also, the law is unpopular among large segments of society. Writs of assistance encourage the use of undue force by police and violate civil liberties. Too much police effort is concerned with securing convictions for possession of cannabis and not enough with controlling other types of drug use. We are not sure of the impact of a criminal record on educational and work opportunities, but the effects must be negative overall. Some have suggested that the law be left as it is but that the records be destroyed or sealed. However, federal criminal records are extremely difficult to destroy or have sealed, even in cases of absolute discharge or pardon. Also, local police, court, and provincial records are highly diverse and difficult to expunge.

Have Only a Fine for Cannabis Possession

This option would reduce the variation allowed in sentencing and would avoid imprisonment. Fines might be substantially decreased, as in some states south of the border, to the level of parking fines. A special record-keeping system might be developed to handle such fines—one not involving fingerprinting, photographing, and long-term storage, as required under the Criminal Code. Such a system exists for parking offenses and other minor delinquencies.

Accepting this option would not necessarily mean that the number of charges laid would decrease. However, police might find it an unproductive area in which to work and hence lay fewer charges. Decriminalization in the United States did lead to very substantial savings as police were shifted to other jobs (Single, 1981). However, lessening Canadian cannabis penalties in the past has in fact increased the number of charges laid and the convictions obtained (Erickson and Smart, 1980).

Pardons could also be more readily available than at present if penalties were lower. Records for pardoned persons are separately filed and cannot be revealed without the Solicitor General's approval. However, changing all local and provincial records would be more difficult.

Repeal the Possession Offense

This option would mean that people would be allowed to possess small amounts of cannabis material or even a few cannabis plants for

their own use. The amount would be difficult to fix. For example, should it depend upon the user? Should an infrequent user be allowed only a few grams but a daily user several grams? Nonetheless, redefining the offense would very greatly reduce the number of convictions and mitigate the criminal-record consequences. It is unlikely that Canadian law would ever allow the possession of large amounts of cannabis.

It has been suggested (Single *et al.*, 1980) that this provision should be combined with "proposals designed to discourage use and to indicate the government's disapproval and concern." Presumably the proposals would involve some sort of large educational or mass-media persuasion. To date, only one jurisdiction (Alaska) has taken this option, and we have no evidence yet on what the costs and benefits have been.

No doubt a major concern about repealing the possession offense law is that cannabis use might greatly increase, perhaps to levels never before imagined. There seems to be no guarantee that an explosion in use would not happen, although it appears unlikely. Nevertheless, without some assurance that increase in use would be minimal, it is not likely that Canadian governments would repeal the possession offense, particularly in light of increasing evidence that cannabis has adverse health consequences (see chapter 2).

Variations on the repeal option have included the creation of government regulatory schemes or consumer cooperatives to market cannabis in a controlled way. The most ambitious of the plans foresees government stores based on the alcohol distribution model. Such an arrangement would greatly reduce the illicit market for cannabis, provided the government price was competitive. Sale would also generate taxes, which might be used to treat the adverse consequences of an increase in drug use. Given the conservatism of Canadian politicians about the cannabis issue, it seems frivolous to think that government marketing schemes are close at hand.

We should note that a number of individuals and groups in Canada were not in favor of cannabis decriminalization, at least in the recent past. For example, in 1975 a draft bill (S19) to allow people to avoid imprisonment if their cannabis was for their own use was argued before a Senate Committee. The Council on Drug Abuse and the Canadian Association of Chiefs of Police argued that simple possession should remain an offense and that the laws should not be more lenient. These groups also argued against lighter sentences for those importing small amounts of cannabis for their own use. More recently, the Attorney General of Ontario has opposed a federal proposal that possession of small amounts of cannabis (30 grams or less) be made a less serious offense.

The Ontario Secondary School Headmasters' Council has consistently argued that the present cannabis laws not be changed, as change would promote more cannabis use. They have also argued that present discharge provisions are of little consequence to the offender. (That is, although the offender retains a criminal record, no conviction is handed down.) They have argued for graduated penalties for subsequent offenses (up to \$1,000 fines).

Numerous lawyers, parents, and teachers have also expressed concern that cannabis laws not be liberalized in a way that will encourage use.

What is the best option for cannabis legislation? Of course, that depends on many suppositions and guesses about the future, but frequently with social policies we must make decisions without having all the facts. The option with the least risk for health and best opportunity to improve social justice is one where: (1) the penalty for possession is reduced to a fine; (2) the public is made aware of the possible adverse consequences of cannabis use; and (3) serious efforts are made to reduce the long-term consequences of a possession offense by storing records separately and having them open only to the Solicitor General.

COMPULSORY TREATMENT FOR DRUG ADDICTS

A recurring legal problem has been whether addicts can be committed compulsorily to treatment merely because they are addicts. Addicts have been treated voluntarily while prisoners in federal or provincial penitentiaries convicted of various crimes (other than being an addict). However, it is not clear that addicts can be committed to treatment solely on the basis that they are addicts or drug users. It will be recalled that such provisions were in a part of the 1961 Narcotic Control Act which was never promulgated. Since that time, several provinces, but especially British Columbia and Prince Edward Island, have developed the programs and legal machinery for compulsory treatment.

In 1978 British Columbia passed legislation which would allow the compulsory treatment of addicts. The aim was to devise methods of treating heroin addicts rather than alcoholics or other types of drug users. Suspected addicts were to be sent for observation and assessment lasting a maximum of a few days. After a determination that addiction existed, they were to be committed to prison-like treatment facilities for a maximum of six months. A large machinery was constructed for processing and treating cases; however, no one was ever compulsorily committed (*The Journal*, September 1981).

Very early in the British Columbia program, there were court challenges initiated by civil-rights groups. The main objection seems to

have been that compulsory treatment involved the use of criminal law and was therefore outside the power of a province to enact. The case against compulsory treatment was won in a British Columbia court, but then lost on appeal (*The Journal*, August 1980). Civil-liberties groups threatened to appeal the case to the Supreme Court of Canada if the British Columbia compulsory-treatment plan was instituted. However, the plan has apparently been abandoned by the British Columbia government, and compulsory treatment is not being contemplated at present. Recently, the Supreme Court of Canada also ruled on the matter and decided that compulsory-treatment legislation could be enacted by the provinces.

A treatment system has recently been approved in Prince Edward Island's bill giving police the power to take into custody people apparently needing "remedial treatment by reason of the abuse of alcohol or drugs" (*The Journal*, September 1981). Such people are to be taken to treatment centres where a medical examination must be made within 72 hours. If treatment is needed, a person can be detained for a further two weeks. At present, the bill has not been given royal assent and is, of course, not law. Whether it can stand civil-liberties challenges in the courts is uncertain, but they are likely to be made. Another important issue is whether compulsory treatment can be defended at all while there is no workable treatment for addicts. This significant limitation has received very little consideration and could be the basis of later civil-liberties challenges.

SUMMARY

The relatively harsh national drug laws in Canada rest on the presumption that laws have both general and specific deterrence powers; however, there is little evidence for either effect. That addictive drugs are not highly available in Canada is noteworthy, for there is much evidence that availability and drug problems are closely related. The main laws controlling drugs in Canada are federal, for they come under the criminal law and the "peace, order and good government" powers of the federal government. The main laws are the Hazardous Products Act, the Food and Drugs Act, and the Narcotic Control Act. All except the first contain heavy penalties and are strictly enforced with a variety of special police powers, including writs of assistance. There is some indication that strict Canadian laws were successful in controlling opium use in the 1930s and amphetamine use in the 1970s. However, cannabis laws must be seen to be a failure. They do not appear to discourage cannabis use and tend to criminalize users. Although there is agreement about the need for a change, the exact change required cannot be agreed upon. The new Constitution of Canada is sure to create some changes, as drug laws appear to be counter to the Charter of Rights provisions. Likely the changes will be towards liberalization.

Canada and International Drug Laws

The development of international drug laws was one of the major successes of the League of Nations, an agency whose successes were few. Although the first treaty was signed in 1912 at The Hague before the League was created, the war delayed its implementation until 1916. Canadians had a major role in the development of the first international treaties and in all those dealing with narcotic drugs. (“Narcotics” in this chapter will refer to those drugs included in “narcotics” legislation.) Canada has ratified all of the narcotics control treaties, including the Single Convention of Narcotic Drugs (see below), but has not yet ratified the Convention on Psychotropic Substances, 1971. This chapter looks at how these laws were developed and what impact they have on Canadian drug problems and their solution. A further aim is to examine the reasons for Canada not having signed the Convention on Psychotropic Substances.

EARLY HISTORY OF INTERNATIONAL DRUG LAWS

For many centuries drugs have been a reason for both peaceful trade and occasional conflict between countries. Christopher Columbus found the inhabitants of the Caribbean smoking tobacco in the late 1400s, and his sailors and other early travelers brought the habit to Europe, where smoking became widespread by 1560 (Lowes, 1963). Tobacco smoking was spread by the Spaniards to the Philippines, another of their far-flung colonies. From there it spread to China and Formosa. It became very popular in Chinese society among both sexes and in all areas. Opium smoking derived from it and grew up in the same places as tobacco smoking. Prior to this, opium was eaten in China—certainly a less damaging and less addictive practice. In a sense, tobacco smoking led indirectly to the first international drug laws, for such laws were required to control opium *smoking* in China and in other countries.

It was opium smoking which created the great surge of interest in growing and exporting the drug. Prior to the adoption of smoking, opium use seems to have been a minor problem in China and elsewhere. However, by 1715, the opium trade was huge between British India (the producer) and China (the user). Anti-opium edicts resulted in a variety of wars and military skirmishes between Britain and China in the 1800s but no real international agreements (for the history of this period see Lowes, 1963, or Musto, 1973). The first international conference was held at Shanghai in 1909 as the "International Opium Conference," essentially to control the unwanted sale and importation of opium into Asian and North American countries.

The international movement for opium controls had many precursors in international activities in other social and health areas. For example, controls on the African slave trade began in the early 1800s (Lowes, 1963) and continued into the late 1800s. The Red Cross had been established in Switzerland and by 1907 claimed some 60,000 members in over 1,000 "societies." In the alcohol field there was even more international activity. For example, various countries concerned with West Africa agreed in 1892 not to export alcoholic beverages to West African countries (Pan, 1975). In 1907, an International Council against Alcoholism was established in Lausanne, with participation by 27 countries by 1910; it held international meetings to publicize alcohol problems and to promote national and international programs. We have no evidence that these activities led directly to international controls on drugs. However, moral entrepreneurship in drug control should be seen as part of a larger social movement. In the early 1900s people were beginning to explore the use of international agreements in all sorts of health and social matters, and those interested in drug abuse controls benefited from the exploration.

CANADIAN INVOLVEMENT IN INTERNATIONAL DRUG CONTROL

Much of the credit for the Shanghai Conference of 1909 and the subsequent international opium agreements must be attributed to a Canadian Anglican clergyman, Bishop Charles Henry Brent. He was born in 1862 in Newcastle, Ontario, and ordained a deacon in Toronto in 1886. An ambitious and restless man, he moved to Buffalo in 1887 and later worked in a poor area of Boston (Neill, 1962). He went as a missionary to Manila in the Philippines, a city with a large number of opium dens and indeed one of the places where opium smoking began. As Episcopal Bishop of the Philippines (newly taken over by the United States) Brent sent a letter to President Theodore Roosevelt in July 1906 deploring the opium trade and suggesting "international action" in view of the "manifestly high" course of the United States of America "in rela-

tion to the traffic in opium." President Roosevelt endorsed the idea of international action, and long negotiations led to the creation of the Shanghai Commission, to which Brent was appointed.¹ Much of the background work of the Commission was done by Brent and a Dr. Ramsay Wright, who had been educated at McGill University. Mackenzie King officially represented Canada at the Conference, and later presented a detailed report on the drug problem and legal controls in Canada (Dawson, 1958).

The Shanghai Conference eventually led to the Hague agreement of 1912, which severely limited importation of opium into China, limited trade in opium among other countries to medical purposes, and created an international exchange of information on laws and on statistics of use for opium and morphine and for cocaine as well.

After the First World War, the League of Nations inherited the problems of international narcotics control. A succession of treaties and amendments followed the Hague agreement and a variety of secretariat functions were established, first by the League and then by the United Nations. Table A-4 in the Appendix shows the various agreements and the dates on which they were signed by Canada. The two main international drug treaties are now the Single Convention on Narcotic Drugs, 1961, and the Convention of Psychotropic Substances, 1971.

The current international machinery for drug control operates through the United Nations General Assembly, which has five major committees, one of which deals with social matters and is termed the Economic and Social Council of the United Nations (ECOSOC). It receives reports from the International Narcotic Control Board (INCB), which monitors the ways in which treaties are adhered to by ratifying countries, and from the United Nations Commission on Narcotic Drugs (UNCND), which discusses world drug problems and makes recommendations for both national and international action to control the problem. The Commission is made up of some 30 members from countries chosen on a rotating basis by ECOSOC; another 40 or so countries send observers. It has the UN Division of Narcotic Drugs as its secretariat. The Division carries out much of the actual work of the Commission through education and training courses, information collection, drug analysis, research on drugs, and provision of information to governments. The World Health Organization gives technical advice to the Commission on drug toxicity and how drugs should be scheduled in the international

¹ It is surprising that a letter from an unknown bishop representing so insignificant a constituency as Episcopalians in the Philippines should arouse such a sensitive response. Perhaps President Roosevelt, as the conqueror of the Spanish in Puerto Rico, felt a special sympathy for the former Spanish colony of the Philippines.

treaties. It also takes responsibility for research and training in health areas.

Canada has always had a prominent role in the international drug control machinery right from the time of Bishop Brent and Mackenzie King. In fact, Canada's long membership on the UN Commission and earlier League of Nations bodies has put it in the so-called "Gentleman's Club" (Bruun *et al.*, 1975)—the small group of countries which have had the major role in defining international drug problems and their control over several generations. When the UN Commission was established in 1949, Canada was one of only 10 countries given "indeterminate status" or semi-permanent membership. In 1978, Dr. Donald Smith, a Canadian, served as its chairman. However, the following year Canada's membership reverted to "observer status," a three-year term having been introduced. As of 1979, after 40 continuous years of membership on the Commission, Canada was no longer officially represented.

THE SINGLE CONVENTION ON NARCOTIC DRUGS

As can be easily surmised from its title, the Single Convention on Narcotic Drugs is the main international treaty concerned with worldwide control of narcotics. The treaty became available for ratification in 1961 after more than 10 years of negotiation over its content. It came into force on December 13, 1964, after some 40 countries had ratified it. As of the end of 1981, a total of 113 countries, including Canada, have ratified it. This degree of international agreement makes it one of the most popular international treaties ever devised, rivaling even those concerned with diplomatic relations and the law of the sea. Virtually all countries which sign United Nations treaties have signed the Single Convention. (Those countries which do not sign are typically very small and underdeveloped and lack the resources to implement most UN treaties.) It is difficult to be sure what any particular country achieves by signing an international drug control treaty. However, some conjectures can be made about the benefits of having a treaty on a global level.

Background of the Single Convention

At the time the United Nations came into being, it inherited from the League of Nations a hodgepodge of drug treaties. To the four existing treaties the UN quickly added three others (in 1946, 1948, and 1954). In this welter of treaties, the obligations, rights, and privileges of both countries and international agencies had become confused and even obscure at many points. At its first session the UN General Assembly asked that the complex machinery of drug controls be simplified. As a result the UN Commission drafted a series of new proposals for a "single" convention on narcotics, bringing together and integrating all earlier

treaties and removing anachronisms. A meeting of 73 countries, including Canada, worked on these drafts and had a treaty available for ratification in March 1961. A Canadian legal expert, Robert E. Curran, was chairman of the drafting committee. Canada was the first country to ratify the Single Convention on Narcotic Drugs.

Provisions of the Single Convention

The Single Convention is a complex document and makes heavy reading for the non-specialist. It contains some 50 articles or sections, each with a large number of subsections plus lists of drugs covered by the treaty. There are also some more general “resolutions” concerning the need for treatment of addicts, for technical assistance on drug abuse, for keeping of records on illicit traffickers, and for further study of the international control machinery. The main features of the treaty can be summarized as follows:

- The drugs covered involved more than what is pharmacologically understood by “narcotics” and include cannabis, coca bush and leaf, and opium in all its plant forms and derivatives and synthetic forms.
- Drugs can be added to the control schedules on the recommendation of the World Health Organization to the effect that they are liable to abuse and not offset by therapeutic advantages.
- The United Nations Commission on Narcotic Drugs (UNCND) and the International Narcotics Control Board (INCB) were established to oversee matters arising from the Convention. The UNCND was to amend the schedules as needed and make recommendations for scientific research and technical cooperation. The INCB was to receive data on drug use and abuse, and on the requirements for opium for medical purposes, from parties to the Convention.
- Parties to the Convention were required to furnish, as requested, information to the INCB on illicit drug traffic, requirements of drugs for medical purposes, changes in laws, and other relevant matters.
- Parties agreed to limit the quantities of any drug manufactured or imported to those necessary for medical and scientific purposes. The medical requirements for drugs such as opium for pharmaceuticals were to be established by the INCB. Countries agreed not to export drugs to other countries except for such purposes, and to do so in keeping with the laws of other countries.
- Cultivation, importation, trafficking, manufacture, and trade in drugs not for medical or scientific purposes was to be prevented by legal means. Those breaking the laws involved would be subject to imprisonment or other penalties for serious offenses.

- Parties to the Convention agree to “give special attention to the provision of facilities” for the treatment and rehabilitation of drug addicts.
- Parties could “denounce” the treaty (i.e., withdraw from it) upon six months’ notice to the Secretary-General of the United Nations. (None has withdrawn yet.)
- Parties could prepare amendments to the Convention, but acceptance would depend on a conference of the parties called by the Secretary-General. Reservations to the treaty provisions, except those entered at the time of ratification, could not be made.

Problems with the Single Convention

As stated earlier, the Single Convention was one of the most popular UN treaties ever developed. Since its coming into force, a few problems have been noted, however. It is very doubtful (see Bruun *et al.*, 1975) that the treaty or its predecessors have had much impact on illicit traffic in narcotics on a worldwide basis. However, there is evidence that the treaties have been successful in limiting legal opium production to a few countries and in limiting the diversion of legally produced narcotic drugs to the black market.

Unfortunately, the Single Convention on Narcotics became outdated quickly. Not long after it came into force, concerns about such psychotropic drugs as speed and LSD were expressed in many countries. Also, THC (rather than cannabis) began to be used in many countries. Since none of these drugs is covered by the Single Convention, a new treaty for psychotropics was eventually created. More recently it has been pointed out (Smith, 1981) that the Single Convention does not cover opiates which have been cloned from cells. Nor does it effectively control opium grown not for export but for medical use within a country.

An additional problem has emerged since Australia began to grow opium for the pharmaceutical market, for there is now a world oversupply. Growers in poorer countries such as India and Turkey—established suppliers for the legal market—are under pressure to sell in the illicit market in order to profit.

Effects of the Single Convention on Drug Abuse in Canada

The impact of the Single Convention of drug use in Canada is very difficult to assess. As no real study has been made, we are left with only conjectures. The treaty allows Canada to be part of the opium estimates system and to restrict the importation of narcotics to what is legitimately needed. However, imports of legal narcotics could have been regulated with national controls, and perhaps just as well. The treaty seems not to

have promoted the development of treatment facilities for drug addicts; most of them actually predated its ratification. There is a possibility that the treaty helped to control the diversion of narcotics from pharmaceutical houses through its very stringent record-keeping requirements; however, Canada had already had a good system before 1961. Perhaps the main value of the treaty to Canada is that its ratification indicates our intention to take the drug problem seriously, both nationally and internationally. The mechanisms established by the UNCND and the INCB provide a variety of reports on various types of legal and illegal drug use in different countries. They give some indication of trends in Canada compared to other countries and allow steps to be taken based on those trends. These agencies serve as a clearinghouse for information on drug abuse on a worldwide basis, and their meetings provide a forum for discussing more general issues of policy and controls.

In some quarters it has been stated that the treaty limits Canada's ability to decriminalize cannabis by doing away with penalties for possession. However, this is not the case, for the treaty specifies penalties for cultivation, manufacture, trafficking, and importing—not for possession

THE CONVENTION ON PSYCHOTROPIC SUBSTANCES

The Convention on Psychotropic Substances is the second major international treaty for drug control. It is concerned with many of the psychoactive drugs not covered by the Single Convention, especially hallucinogens, stimulants, depressants, and some tranquilizers. The Convention was developed over the years between about 1967 and 1971. It was debated in detail at an international conference in Vienna in 1971 and became available for ratification on February 21 of that year. However, it was not until August 17, 1976, that it came into force (90 days after being ratified by the fortieth signatory country). It has always been much less popular than the Single Convention, which came into force only three years after it was available for ratification. Canada, along with many other nations, has not signed the Convention on Psychotropic Substances. It is worth examining the background for the Convention, some of its problems, and the reasons for Canada's non-ratification. This material was reviewed extensively by an international working group convened by the Addiction Research Foundation in 1980, and what follows makes use of the two reports produced from their meetings (Addiction Research Foundation, 1981b; Smart *et al.*, 1981c).

Background of the Convention on Psychotropic Substances

During the postwar period, many countries experienced a sharp increase in problems in the use of non-opiate drugs. In the 1960s, both North American and European countries saw the first appearance of

hallucinogens such as LSD, PCP, and STP and their then growing use by many young people. Most of these drugs were imported illegally from other countries. There were also several amphetamine epidemics, most notably in Japan, Sweden, Canada, the United States, and England. In the case of Sweden and Canada, hallucinogenic and stimulant drugs were virtually all imported. Numerous presentations, especially by Sweden, at the UN Commission put the need for controls on psychotropic drugs. The Commission decided that such drugs could not be added to the Single Convention and that a new treaty was required.

The Nature of the Convention on Psychotropic Substances

The Convention identified four schedules of drugs as follows:

- Schedule I—substances for which the liability to abuse constitutes an especially serious risk to public health and which have very limited, if any, therapeutic usefulness (e.g., LSD).
- Schedule II—substances for which the liability to abuse constitutes a substantial risk to public health and which have little to moderate therapeutic usefulness (e.g., amphetamines).
- Schedule III—substances for which the liability to abuse constitutes a substantial risk to public health and which have moderate to great therapeutic usefulness (e.g., many barbiturates, many opiates).
- Schedule IV—substances for which the liability to abuse constitutes a smaller but still significant risk to public health and which have therapeutic usefulness from little to great (e.g., tranquilizers).

The Convention stated that all ratifying countries would:

1. Prohibit the use of all Schedule I substances except for restricted amounts supplied to authorized persons for scientific and very limited medical purposes in medical and scientific establishments directly under the control of, or specifically approved by, the government.
2. Limit the manufacture, export, import, distribution, and stock of, the trade in, and the use and possession of substances in Schedules II, III, and IV to medical and scientific purposes.
3. Ensure that all persons involved in (2) above (with the exception of use and possession be duly qualified and authorized by license and as such maintain appropriate security and execute the appropriate provisions enacted in pursuance of the Convention.
4. Maintain a system of inspection and record-keeping and ensure that all prescriptions for Schedules II, III, and IV substances meet

the regulations, including directions for use (cautions and warnings) for all substances, so as to protect the public health and welfare.

5. Furnish the Secretary-General of the United Nations with information on changes in related national laws and regulations as well as significant developments in abuse or in illicit traffic within their territories.
6. Furnish the Secretary-General of the United Nations with information relating to the need to add or transfer a substance, and endeavor as much as possible to control substances not falling under the Convention which may be used in the illicit manufacture of psychotropic substances.
7. Prohibit, if constitutionally permissible, advertising of the scheduled drugs to the general public and take all practicable measures for prevention including, among others, treatment, education, and rehabilitation.
8. Take preventive and repressive action against illicit traffic within their territories and cooperate with other parties and international organizations in maintaining a coordinated campaign against international illicit traffic to ensure that legal papers, etc. are transmitted in an expeditious manner.
9. Adopt penal measures for any action contrary to law or regulation pursuant to the Convention with the understanding that offenders be permitted to undergo treatments etc. as an alternative or an addition to punishment.

The Convention recommended that parties provide a special administration for applying the provisions of the Convention, and that they treat serious offenses involving psychotropics as extraditable.

Parties may permit authorized persons to supply, at their discretion and without prescription, small quantities of substances in Schedules III and IV for use for medical purposes by individuals in exceptional cases. Parties also may adopt more severe measures of control or, given exceptional circumstances, adopt less strict control than provided for by the Convention.

Although numerous countries and agencies were against such a treaty from the outset (see Smart *et al.*, 1981c, for a review), Canada was not, at least officially. Representatives of the pharmaceutical industry argued that international controls were not needed and that the drugs proposed for control caused little harm. Countries with large pharmaceutical industries, such as Switzerland and the United

Kingdom, argued that strong national controls on such drugs were more effective.

Opposition to the treaty was strong and partly effective for some years. It came into force with relatively few countries supporting it. What is worse is that many of the largest producers of psychoactive drugs (such as the United Kingdom and Switzerland) have not signed it. The United States only recently signed (in 1980), and their delay has meant that many nations also have refused to sign.

Problems with the Convention on Psychotropic Substances

Many benefits of the Convention can be seen, but it is not clear that they outweigh the problems. The Convention, if generally accepted, would help to control psychoactive drugs and would allow countries to forbid their importation. The treaty could lead to the improvement of national control mechanisms such as the prescription system. Also, a country's reputation as being helpful in the worldwide fight against drug abuse could be enhanced. It has often been suggested that the richer companies are victimizing the poorer countries by selling them psychoactive pharmaceuticals the latter can ill afford. The poorer countries, which are the source of illicit opiates, might be willing to enforce restrictions on opiate production if the more developed countries would support agreement to the Convention as a *quid pro quo* (Smart *et al.*, 1981c).

Problems with the Convention have been seen to be numerous. The most important of those pointed out by the Addiction Research Foundation Working Group include the following:

1. Adaptation of national laws and regulations create problems in many countries, particularly in developing countries without extensive control mechanisms or record-keeping systems for psychotropic substances.
2. Implementation of the Convention's provisions and the establishment of new or additional control mechanisms could be very costly and require supplementary administrative work. Some countries (even developed ones) have difficulties with the implementation of the record-keeping requirements.
3. There is practically no difference between drugs listed in Schedule III and Schedule IV with respect to abuse potential and pharmacological properties; despite this fact, different measures of control are provided by the Convention. These differences add supplementary work for national agencies in charge of the administrative implementation of the Convention.
4. Many developing countries are not in a position to comply with

prescription requirements as required by the Convention. It would be ideal if drugs for the treatment of neuropsychiatric disorders were always prescribed by psychiatrists, but in many developing countries, unfortunately, the number (and relative proportion) of both general medical practitioners and psychiatrists is low. The strict fulfillment of the requirement for prescription by qualified personnel only could restrict the availability of important therapeutic agents and hinder the treatment of a relatively significant proportion of the countries' population.

5. The criteria and practices of parties in exempting preparations vary from country to country. This situation could weaken the control of psychotropic substances in other countries as well.
6. Some psychoactive substances which create important abuse problems in a number of countries are not scheduled in the Convention—for example, inhalants and tranquillizers.

The Working Group's major recommendation acknowledges the problems that many countries had with the Convention and stated:

There are difficulties in scheduling various drugs and the classification systems of the Single Convention on Narcotic Drugs and the Convention on Psychotropic Substances need to be revised and harmonized. In order to assure the updating of the classification and control systems a new philosophy has to be developed, taking into account the social, together with the public health and psychopharmacological, parameters. New mechanisms must be developed for the integration of psychotropic medicaments under international control into the national pharmaceutical drug control system.

It is recommended that the study of these problems and the development of a new philosophy, classification and control systems should be undertaken as soon as possible. This study should take into account, and to the extent necessary, include consideration of policy analysis and international strategies of drug control.

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This will be a time-consuming process and the Working Group felt that efforts to secure ratification and implementation of the Convention by all United Nations member States should continue. The Working Group also proposed a number of actions which could lead to the improvements of the functioning of the Convention on Psychotropic Substances.

Reasons for Canada's Not Ratifying the Convention on Psychotropic Drugs

It is somewhat out of character that Canada has not ratified the Convention, given its long history of internationalism. The reasons have been dealt with in detail by Smith (1981b) in his presentation to the Addiction Research Foundation Working Group on the Convention. Many of them are similar to concerns stated by other non-signatories such as the United Kingdom. One important reason—that the United States had not signed—now no longer holds. However, several of the other major exporters of drugs to Canada (e.g., Switzerland, the United Kingdom, Denmark) have not signed, and hence little impact from the trade provisions could be expected. An additional reason is that Canada already has tight regulatory control over the drugs covered by the Convention and even tighter control for some not covered, such as tranquilizers. Given such control, it is difficult to justify the additional expense in reporting and record-keeping necessitated by the treaty—for example, import and export certificates. Probably the major reason for Canada's non-ratification has to do with the costs of the extra paperwork involved.

Finally, there is some concern about how effective the treaty can be in enhancing the control of drug abuse in a country where it is already heavily controlled.

FUTURE INTERNATIONAL CONCERNS

It is difficult to predict what the future concerns of international control may be. Most likely, almost all nations will eventually sign the Psychotropic Convention, even Canada and the United Kingdom. Real progress in this area may come from the creation of a whole new order in international drug laws. There is clearly a need to simplify and rationalize the two treaties and to rethink the whole machinery of control.

Some have argued that there is a need to include alcohol as one of the internationally controlled drugs or to have a separate treaty concerning it. It is clear that alcohol is an international drug in that multinational companies are among the largest sellers, and the export of alcohol to many countries is increasing. Recommendations have been made to the UNCND about the scheduling of alcohol and other drugs by a number of countries and agencies—for example, the Working Group on the Psychotropic Convention. A new order is almost certain to come, but it is likely to be many years away.

SUMMARY

International controls on drugs are a recent development. In the early 1900s the first discussions about the need for international controls on opium were held. The first agreement made in 1912, limiting the trade in opium on an international level, became the prototype of all later laws. Canadians have always had a prominent role in international drug control activities, from the early days until the present.

Currently, there are two major international drug treaties—the Single Convention on Narcotic Drugs and the Convention on Psychotropic Substances. Both have limitations and are in need of revision or integration. Canada has signed all narcotic treaties except the psychotropic treaty. Since the major exporters of drugs to Canada are beginning to ratify the treaty, Canada will do so as well. The future should see a revision of the international drug machinery to make it more modern, to remove confusion, and to integrate a greater variety of drugs such as tranquillizers and alcohol.

Sociocultural Contexts and Drug Use in Canada and the United States

Social and cultural factors frequently determine the type and rate of drug use in different countries and hence may also have a major preventive impact. A recent volume from the World Health Organization (Edwards and Arif, 1980) argued that the sociocultural context governs "who takes what drug and why, how the drug-taker perceives himself and is perceived and responded to by others, whether a dependent person seeks help, whether and how a population's demands for drugs is kept in balance and how demand may be deliberately reduced." Unfortunately, we have very few studies comparing drug use in different countries or attempting to explain variations in rates of use with respect to availability and to social or cultural aspects of life. One of the few exceptions would be the study by Akacsu (1976) in Turkey. He showed that the low rate of opium use where it was grown occurred because the population had extremely negative attitudes toward opium use. Unfortunately, we have paid very little attention to how the Canadian cultural milieu determines drug use. Why is it that cannabis is the most important illicit drug in Canada? Why do Canadians seem to use so much codeine compared to other countries, and why has heroin use always been so low compared to that in the United States? Since many would argue that rates of heroin use ought to be about the same in the two countries, it is worth examining the reasons for the difference.

There are an estimated four to five times as many heroin users per 100,000 population in the United States as in Canada. Differential rates of use have existed for many years. Such differences are difficult to explain, given that the two countries are similar in so many aspects of culture and lifestyle. Possible explanations include differences in drug availability, general drug-taking propensities, overall level of criminality, laws governing use, and population characteristics. Efforts to examine such variables require examination of existing statistics and some historical analysis. It is possible, using such data and analyses, to suggest types of preventive efforts in Canada which may have been effective in cur-

tailing heroin use. An additional problem is to assess whether these efforts would be appropriate in a different sociocultural context.

SOCIOCULTURAL REASONS FOR EXPECTING SIMILARITIES IN HEROIN USE

It is easier to see sociocultural reasons for similarities in drug use rather than differences. Much of the data on Canada and the U.S.A. has been summarized by Michalos (1980) for a special series of volumes comparing the two countries on "the quality of life." The overwhelming impression from these data is of similarity (table A-5 in Appendix). Broadly speaking, Canada and the U.S.A. share the same language (except for French in Quebec) and a 4,000-mile border, much of which is unprotected and ideal for smuggling. The U.S.A. and Canada share a successful trade partnership and represent almost a common market for many products. Incomes, unemployment rates, inflation rates, and educational achievements of the two populations are very similar (World Bank, 1979; Michalos, 1980). What small differences in such aspects as do exist are usually temporary and could scarcely explain large differences in heroin use.

A vast number of health-related factors in Canada approximate those in the U.S. (Michalos, 1980) such as life expectancy, infant death rates, major causes of death, overall death rate, hospital occupancy rates, mental hospital admissions, and population per physician. However, hospital bed ratios are much higher in Canada, and personal expenditure on health care is lower than in the U.S.A., in part because of the Canadian prepaid health care system.

On a more general basis, it is clear that the ways of doing things in the two countries are virtually identical in many respects. For example, the federal system of government exists in both, with continual strains between the levels of government. Popular culture is almost completely shared via television, movies, and music. Beyond that, the systems of justice, education, and finance are similar in a myriad of small but important ways. Indeed, the overall impression observers have of how life is conducted in the two countries must be one of similarity rather than difference.

RATES OF HEROIN USE IN CANADA AND THE UNITED STATES

There is no uniform system of drug abuse reporting used in both Canada and the U.S.A.; however, a number of comparisons can be made utilizing available data derived from addict registers and records of

various agencies in each of the two countries (table 16). These data sources are commonly used by government officials and scientists in the drug field to estimate the extent of heroin use. Although there are limitations inherent to these reporting systems (Greene, 1974; Thomas, 1975), they do represent fairly reasonable indicators of prevalence rates.

In Canada, the Bureau of Dangerous Drugs (BDD) of Health and Welfare Canada maintains an index of illicit drug users. This index monitors and collates information from a variety of sources including police, treatment centres, and pharmacies. The National Institute for Drug Abuse (NIDA) in the U.S.A. estimates the number of heroin users by using treatment admission records, deaths, emergency room visits, and heroin price-purity data for selected cities to project for the entire nation. The Drug Enforcement Agency maintains a register of active narcotics users known to police. It can be seen from table 16 that the rate of heroin users per 100,000 population in 1977 was about four times as high in the U.S.A. (183.0 minimum) as in Canada (48.5), although for 1974 it had been about six times as high. Arrest statistics show arrest rates for addicting opiate-like drugs (e.g., heroin, opium, and derivatives) and cocaine to be seven times as high or higher in the U.S.A. than heroin arrests in Canada. Treatment statistics show that the rate of admissions of opiate addicts to treatment is about four to six times as high in the U.S.A. as in Canada. In general, the available data indicate a rate of heroin use for the mid- to late 1970s at least four times as high in the U.S.A.

AVAILABILITY OF HEROIN

Data on actual street-level availability of heroin in the two countries are difficult to assemble, but some indications about availability can be found. Neither country currently grows opium either legally or illegally. Apparently all street heroin is illegally imported rather than processed locally from imported opium. For a long period, starting in the 1940s, both countries received their heroin from the same French-Corsican syndicates located in New York, Montreal, and Toronto (Solomon and Versteeg, 1978). In fact, much of the heroin sold in the U.S.A. up to the early 1970s entered North America through Montreal, according to some RCMP reports. Currently, Chinese importers are said to be responsible for the heroin traffic in British Columbia, while Asian and Latin American importers service the U.S.A. The routes of supply for the two countries appear to be rather different.

Recent studies of high school seniors in both the U.S.A. and Canada used comparable measures of heroin availability. Johnston and his colleagues (1980) found that 18.9% of a national sample of high school seniors in the U.S.A. stated that heroin was "fairly easy" or "easy"

TABLE 16

*Indicators of Heroin Use in Canada
and the United States*

Indicator	Rate per 100,000 population ¹					
	1974	1975	1976	1977	1978	1979
Estimated number of heroin users in:						
Canada ²	44.9	47.5	47.2	48.5	48.7	42.8
U.S.A. (minimum-maximum range) ³	266.8-	244.9-	-	183.0-	-	181.7
Arrests for opiate drugs and derivatives in:						
Canada (heroin arrests) ⁴	-	-	-	4.4	5.2	2.4
U.S.A. (heroin and cocaine arrests) ⁵	48.0	37.0	28.0	39.2	38.1	30.9
Treatment admissions for opiate addicts in:						
Canada (illicit narcotic users) ²	10.2	10.2	10.4	11.3	11.1	15.0
U.S.A. (heroin users) ⁶	54.4	-	71.0	55.1	45.6	-

¹ Population statistics for Canada from *Estimates of Population by Sex and Age for Canada and Age for Canada and the Provinces*, 1971-1976, 1978, 1979, Statistics Canada; for the U.S.A. from *Uniform Crime Reports for the U.S. 1979*, U.S. Department of Justice.

² Rates derived from statistics in *Drug Users and Convictions Statistics*, 1974, 1975, 1976, 1977, 1978, 1979, Bureau of Dangerous Drugs, Health and Welfare Canada.

³ Rates for 1974, 1975, and 1977 derived from statistics in *Heroin Indicators Trend Report 1976-1978, An Update*, NIDA, Rockville, Maryland; and for 1979 from G. Seidler, "Middle East Heroin Threatens U.S.," *Focus on Alcohol and Drug Issues*, 1980, 3 (6), 6.

⁴ Rates derived from statistics in *Crime and Traffic Enforcement Statistics*, 1977, 1978, 1979, Statistics Canada.

⁵ Rates derived from statistics in *Uniform Crime Reports for the U.S.*, 1974, 1975, 1976, 1977, 1978, 1979, U.S. Department of Justice.

⁶ Rates for 1974 derived from statistics in L.G. Hunt, "Prevalence of Active Heroin Use in the United States," in *The Epidemiology of Heroin Use and Other Narcotics*. J.D. Rittenhouse, (Ed.), NIDA, Rockville, Maryland, 1977; and for 1976, 1977, and 1978 from *Heroin Indicators Trend Report 1976-1978, An Update*, NIDA, Rockville, Maryland.

for them to obtain. In Ontario (Smart and Liban, 1981), only 11.1% of high school seniors responding to a similar question reported heroin to be "easy" or "very easy" to obtain. Almost certainly heroin is more available in Ontario than in most provinces other than British Columbia, judging by the numbers of known users by province reported in the BDD figures. The availability estimate for Ontario is probably too high for the whole of Canada. Nevertheless, the difference in perceived availability of heroin, at least for Ontario high school seniors, may not be as great in the two countries as the differences in rates of use.

The availability of heroin in large cities is more important than "national" availability, since most addicts are concentrated in more urbanized areas; there is a marked lack of addicts in rural areas in both Canada (Davis, 1980) and the U.S.A. (Ball and Chambers, 1970). Informal evidence from media reports citing police and law enforcement officials as sources suggests that heroin is readily available in all large American cities. However, it has been sporadically difficult to obtain in Canadian cities for some years. Failure of a consistent supply has led to a reduction in the number of new heroin cases and an increase in the use of prescription narcotics such as Percodan, Demerol, and Dilaudid by heroin addicts (Everson and Segal, 1978; Franklin, 1981). Seizures of drugs also provide an estimate of general availability. The International Narcotics Control Board (INCB, 1980) shows that seizures in the U.S.A. are many times larger and more frequent than in Canada. For example, only 4 kg of heroin was seized in Canada in 1978, compared to 368 kg (plus 33 kg of opium) in the U.S.A. The generally easier access to heroin in the U.S.A., including access by high-risk young people, must be an important variable in the high rate of use (NIDA, 1979).

GENERAL LEVEL OF CRIMINALITY

It has been pointed out (Hagan, 1977) that Canadians, compared to Americans, are generally more law-abiding, particularly with regard to serious crime. If we compare data on crimes of violence in the two countries, we find striking differences in most categories. The following figures, from 1979, show rates per 100,000 population:

	Canada	U.S.A.
Murder and non-negligent manslaughter	2.7	9.7
Rape	9.7	34.5
Robbery	88.3	212.1
Aggravated assault	126.3	279.1
Burglary	1,252.3	1,499.1
Larceny/theft	2,898.8	2,988.4
Motor vehicle theft	386.3	498.5

(Rates are derived from *Preliminary Criminal Statistics, Canada and*

Provinces, Statistics Canada, Cat. 85-205, Ottawa, 1979, and from *F.B.I. Uniform Crime Reports for the U.S.*, 1979, Department of Justice, Washington, D.C.)

It is also the case that traditionally Canada has incarcerated a much larger percentage of its population than has the U.S.A. or indeed most Western nations. Although the trend recently in Canada is away from the high rate of incarceration, we would still suspect that adult Canadians would perceive greater risk of imprisonment for serious crime than would Americans.

A large amount of money, usually obtained through theft, prostitution, or drug dealing, is necessary to support addiction. A positive relationship between numbers of addicts and rates of acquisitive crimes should be expected. It has been estimated that on average, addicts require about \$30,000 to \$50,000 of illegal activities annually to support their habit (Preble and Casey, 1969). It is possible that the generally higher level of criminality in the U.S.A. makes heroin addiction and the means of supporting it seem less deviant and more acceptable to those at risk. They may also be aware that if they are apprehended, incarceration is far from inevitable.

There have been speculations that "organized crime" is much less important in Canadian big cities and in narcotics distribution than it is in the U.S.A. However, data and experience to verify such assertions seem not to be available. Organized crime exists in both countries.

GENERAL DRUG-TAKING PROPENSITIES

It might be thought that Americans generally take more drugs and that heroin use is only a part of that pattern. Comparable studies (Johnston *et al.*, 1980; Smart *et al.*, 1980) show somewhat higher rates of cannabis use among American than Canadian high school seniors (50.8% vs. 43.6% having used cannabis in the previous year). The same is true for alcohol consumption: per capita consumption in the U.S.A. in 1977 was about 2.75 gallons of absolute alcohol compared to 2.49 in Canada (Statistics Canada, 1978; Hyman *et al.*, 1980). Rates of regular cigarette smoking are slightly higher in Canada, with 40.6% reporting daily smoking compared to 36.7% in the U.S.A. (Michalos, 1980).

Comparable studies or data on the use of psychotropic drugs such as tranquillizers seem to be unavailable, partly because there is no international requirement for reporting it. However, the INCB reports (1980) show that total legal use of narcotic drugs—especially codeine—is substantially higher in Canada than in the U.S.A. (11,174 doses per 1,000 population in 1974-78 compared to 9,819). Therapeutic doses of mor-

phine, hydrocodone, and codeine (prescription and non-prescription) are proportionately more often taken in Canada. (Codeine is available without prescription in a number of painkillers in Canada, but not in the U.S.A.) However, methadone, oxycodone, pethidine, and cocaine have a higher rate of prescription in the U.S.A.

In general, there is not much evidence that overall drug-taking is substantially greater in the U.S.A. than in Canada. Where differences in favor of the U.S.A. do exist, as for cannabis, they appear to be rather small and on the order of 10%–15% higher. Overall per capita legal use of narcotic drugs is clearly greater in Canada. The high rate of heroin use cannot be well explained by the greater propensity of Americans to take drugs.

LEGAL AND OTHER CONTROLS ON HEROIN USE

Much of the history of actual legal controls on heroin and other opiates has a superficial similarity in Canada and the U.S.A. However, important differences remain. As pointed out by Erickson (1981) and others (Packer, 1968; Hagan and Leon, 1978), "Canada is seen to lean toward the 'crime control' model while the United States tends toward the 'due process' end of the continuum." However, it appears that in the U.S.A. heroin users are more likely to be arrested than in Canada. For example, in 1979, totals of heroin and cocaine arrests were equal to approximately 17% of the estimated heroin-using population in the U.S.A. Heroin arrests are not reported separately from cocaine arrests; nevertheless, it is still probable that they far exceed the rate reported for Canada. In 1979, heroin arrests in Canada represented about 6% of known heroin users. It may be that the general law-and-order approach in Canada has helped to keep down the number of initiates to heroin; that is to say, since jail sentences are more readily imposed, many of the known users are out of circulation and hence not available as initiators or role models.

In the late 1800s, both Canada and the U.S.A. allowed the use of opiates in various patent medicines which were widely available without prescription, and addiction to opiates was very common (Cook, 1969b; Simrell, 1970). Comparisons of the rates of use in the two countries during this early period are difficult to make. Similar laws were passed outlawing the use of opiates in the over-the-counter drugs at about the same time (in 1911 for Canada and 1914 for the U.S.A.). The subsequent development of narcotics legislation in the U.S.A. and Canada—both national legislation and approval of international treaties—is very similar (Cook, 1970). At present, laws concerning possession, trafficking, and cultivation of opiates are roughly similar in the two countries.

However, the consequences of conviction may vary greatly. For example, there are no compulsory treatment or civil commitment programs in Canada similar to those in California and other states. Also, in Canada there is a seven-year minimum sentence for importing. There is no minimum sentence for importing in the U.S.A., although penalties there are higher than for possession or trafficking.

Many criminologists have pointed out basic differences in approach to drug laws in Canada and the U.S.A. In Canada, the "crime control" model (see chapter 8 on national laws) has meant that "the commitment to social order has taken precedence over individual rights." In the U.S.A., individual rights are primary and protected by the constitution. For example, American law demands that police give arrested suspects a detailed reading of their civil rights; no such requirement has existed in Canada up to the time of the new Charter of Rights. In addition, illegally obtained evidence (e.g., from illegal wiretaps) has been admissible at trials in Canada, subject to exclusion only if "irrelevant" or "gravely prejudicial to the accused" (Leon, 1977). Such evidence is not admissible in American courts.¹

Narcotics officers in Canada have long had extraordinary powers when investigating drug cases. Special powers to search both individuals and premises have been granted under the Narcotic Control Act (Section 10):

- A peace officer may at any time,
- (a) without a warrant enter and search any place other than dwelling house in which he reasonably believes there is a narcotic;
 - (b) search any person found in such a place

Personal searches can be done under the Narcotic Control Act without the suspect's prior arrest, whereas under other Canadian legislation the prior arrest is a requirement.

The Canadian "writs of assistance" allow the search of dwellings in drug cases. They are issued to individual RCMP officers, usually for the duration of their career. They may be exercised at any time and place. Unlike search warrants, they require no renewal nor special argument for their use; nor are they subject to judicial review. Virtually all RCMP drug squads have writs of assistance and use them extensively. No such instruments exist in the U.S.A. or in any other country in the world. There can be no doubt that narcotics users in Canada are extremely vulnerable to the forces of law and order, and encounter great difficulty in

¹ Many of the special privileges for investigations under the Narcotic Control Act may be changed by the new Canadian Constitution. See the chapter on national laws for more discussion of these issues.

both starting and continuing drug use. The heavy penalties could also discourage traffickers who import to North America from operating in Canada rather than the U.S.A.

GHETTO AND BIG-CITY LIFE

Traditionally, heroin addiction in North America has been associated with large cities. Within cities, particularly in the U.S.A., high rates tend to be in deteriorating neighborhoods and slum ghettos. Conversely, the rates are comparatively low in stable working-class and middle-class areas. The ghettos have been defined as economically depressed inner-city areas marked by high crime rates, family disorganization, and unemployment. Typically, the residents have been mostly blacks, Puerto Ricans, and, in southwestern cities, Mexican-Americans. The prototype areas would be Harlem in New York City and the "south side" of Chicago.

The real proportion of ghetto dwellers addicted to heroin is difficult to determine, as the definition of "ghetto" varies greatly and the term is not often used in social research. It has been estimated that 80 % of the addicts in New York City live in "slum areas." In their study of drug use among young men, O'Donnell and his colleagues (1976) found that heroin use was associated with residence in large cities, being black or of Puerto Rican origin, being unemployed and not in school, and living unmarried with partner—characteristics which in conjunction are typical of ghetto or slum dwellers. National data from heroin addicts in treatment in the U.S.A. show that minorities are disproportionately represented among those admitted to federally funded treatment programs (Office of Drug Abuse Policy, 1978): 52 % of clients were black (compared with 13 % of the population), and 13 % were Hispanic (compared to 5 % of the population). Most were unemployed and from the large cities. Numerous anthropological studies (e.g., Preble and Casey, 1969; Chein *et al.*, 1964) have argued that heroin use in the U.S.A. represents a method of escape from ghetto life and pursuit of a "meaningful life, albeit a socially deviant one."

The situation in Canada is somewhat different. Canada has a small population (25 million) spread over a wide area so as to make distribution of any imported product costly. There are very few big cities: only three (Toronto, Montreal, and Vancouver) have populations over one million. None seems to have the inner-city ghettos of the American type. It has been shown that Toronto, for example, has a mixture of racial and religious groups in all areas, including suburbs, and that there is no flight of middle-class people to the suburbs (Sharma, 1980). Sharma also found that inner-city racial ghettos did not develop in Toronto despite a large proportion of non-whites (14 %) and a large proportion of foreign-

born (47%). Racial mixing has been the common pattern in Canadian cities, with pockets of racial minorities spread widely over several large cities. Gertler and Crowley (1977) have shown that central Toronto and Montreal contain many stable and revitalizing areas as well as some in decline. The stable areas usually house blue-collar workers or recent immigrants, and are marked by a long tenure and low rates of unemployment. The revitalizing areas attract people with a strong affinity for downtown locations, usually highly educated professionals with high incomes. These areas serve to make the inner city more varied culturally and racially and to stop the drift into urban blight so characteristic of ghetto areas.

In Canada, too, there is a wide variety of visible racial minorities. Yet the available data show that members of racial minorities rarely become heroin addicts. For example, only a few addicts treated in Vancouver are non-white (Le Dain, 1973) and none in Toronto are non-white. It also appears that the addict population is more middle-class in Canada. Very few treated addicts in Vancouver came from families in which there was real poverty, and the occupational distribution of addicts' families is the same as in the general population.

Racial ghettos do exist in Canada, but as small Indian reservations mostly located in remote areas. There are some 300,000 Indians in Canada, about two-thirds of whom live on reservations and the remainder in cities. Most reservations contain a few thousand people or fewer. No reservations are within or even close to the largest cities; most are in the far north. These reservations are marked, as are inner-city ghettos, by economic depression, high unemployment rates (about 40%), overcrowded and run-down housing, and family instability (Canada, Department of Indian and Northern Affairs, 1980). They would be likely places for heroin addiction except for their isolation, small size, and the low incomes of their inhabitants. An additional consideration is that alcohol is the most popular drug on the reservation: four or five times as many Indians as whites have alcohol problems, and as many as 52% of Indians in some studies were found to show serious signs of alcohol abuse (CFADD, 1977). Fewer than 1% of Canadian heroin addicts are Indian. Some narcotic treatment centres, such as the Addiction Research Foundation in Toronto, have never seen an Indian heroin addict. A report on native Indian offenders in Saskatchewan (Schmeiser *et al.*, 1974) showed only one conviction that was for a narcotics violation in 1970-71, fewer than 1% of the total narcotics violations. However, Indians accounted for 40% of the offenses against the Liquor Act and 50% of the assaults. Incidentally, the study of racial distribution in Toronto (Sharma, 1980) showed that the Indian population was typically resident not of the inner-city but of the older suburbs.

CONCLUSIONS

It seems clear that heroin use is much more common in the U.S.A. than in Canada. This difference cannot be accounted for in terms of a greater propensity of Americans to use drugs or even to use legal narcotics. General economic and health factors provide little explanatory power. However, the sociocultural context in the U.S.A. includes a generally higher level of criminality, greater availability of heroin, and the presence of large inner-city ghettos with dispossessed racial minorities. The salient features in Canada appear to be a more law-abiding population, poor availability of heroin, and a tradition of crime control at the expense of individual rights—especially control of drug use—by powerful police authorities.

We can speculate about the preventive factors that mitigate against drug abuse in Canada. The law-and-order tradition, the low level of criminality of the population, and the relative lack of inner-city problems have been a feature of Canadian life for some time. Could they be exported to other countries? The use of severe legal sanctions has been shown to contribute to the control of a recent heroin epidemic in Singapore (McGlothlin, 1980) and to the reduction of opium use in China, in the 1950s (Lowinger, 1977). However, legislative approval for strong sanctions and the public support for them depends greatly upon traditions and attitudes created over a long time. It is unlikely that they could easily be transferred to a country such as the U.S.A. with its strong civil-rights tradition. Prospects for solving the problems of inner-city slums and criminality seem to be poor in the short run (Downs, 1970). Probably the prospects for reducing availability are partly dependent upon the development of a stronger law enforcement approach. On the other hand, perhaps the provision of treatment for addicts will help to reduce the demand for heroin and eventually the real supply. The past five years have seen a reduction in the numbers of cases applying for treatment in the U.S.A. and in the numbers of known heroin addicts.

SUMMARY

Sociocultural contexts are important in the development of drug problems in all countries, but they are rarely examined, probably because they are so difficult to understand. Canada and the United States have always had very different rates of heroin addiction, with that in the United States much higher. However, rates of use of other drugs are not much higher. Many socioeconomic factors suggest that the rates should be similar. The sociocultural context in the United States has led to a higher level of criminality, greater availability of heroin, and a large number of inner-city ghettos with depressed racial minorities. None of these phenomena is very important in Canada. There has been in

Canada a strong tradition of law and order and strong drug control laws rather strictly enforced.

Drug Education: The Role of Mass Media and Schools in Prevention

Many people in Canada and elsewhere expect that every social or health problem can be solved through “education.” Usually the idea is that the schools and the mass media should be used in a preventive role—often one for which they are unprepared and ill equipped. This approach has given us driver education, sex education, and more recently drug education, all conducted in an atmosphere marked by hasty preparation, confused aims, and questionable public support. We know from careful research that neither sex education (Kirby, 1980) nor driver education in schools (Robertson and Zador, 1978; Robertson, 1980) has had much positive effect, and we should expect similar problems for drug education.

Drug education (as opposed to alcohol education) began in Canadian schools in the late 1960s in response to the drug epidemic. Mass-media approaches followed soon afterward. In the intervening years there has been a large amount of unchronicled activity. But few strong conclusions can be drawn. We are still not sure how to use schools and the mass media in educating about drugs. However, some interesting experiments have been made, and others are under way.

In Canada, there is some confusion about the jurisdiction in which drug education lies. Under the British North America Act and the new Constitution, education is largely a provincial matter, although schools are in fact operated by municipalities or local boards rather than provinces. The federal government has no constitutionally clear role in providing health services or schooling, except for those on military bases and for native peoples, but it has supported some health education programs from time to time. However, mass media, especially electronic media, are controlled by the federal government, as are licenses to operate television and radio stations. The federal government could require more mass-media involvement in drug education. It could also prevent the use

of media for pro-drug messages or drug advertising, although such a step seems unlikely at the present. Typically, federal control over print media is very limited except in the most general sense.

The varying levels of authority have meant that there is no national or provincial program or set of policies about drug education which have any significant impact. There is tremendous local variation in what drug education is available and how consistently it is applied.

There is also some uncertainty about what it is that drug education is supposed to prevent. Most programs provide information about the adverse effects of drugs, but it is rarely clear whether all drug use is to be prevented, all illicit use, or only use that has certain harmful effects.

An additional problem is that research on drug education is very poorly developed in Canada, so that we have very little information about "what works." It seems that some drug education exists in all Canadian provinces. Most provincial alcohol and drug commissions or foundations supply materials and expertise for the schools. Alberta is planning one of the largest mass-media, school, and community programs. Saskatchewan has promoted a "safe graduation" program for adolescents leaving school. Manitoba has developed materials for parent education. However, none of these programs appear to have been evaluated; some, such as the Alberta program, are as yet too new.

Only Ontario, through the Addiction Research Foundation, has supported drug education research and development for a number of years. Several important studies have been produced, and more are being planned. Extending our knowledge of effective education depends greatly on new and larger research programs in other sections of the country.

There is no recent survey of drug education programs in Canada, and nowhere can details of programs in the country as a whole be found. However, a report produced for the United Nations Educational, Scientific and Cultural Organization (UNESCO) in 1974 still seems to be valid (Office for the Prevention of Alcoholism, 1974). For this report, the authors surveyed all major education programs in Canada, visited all provinces (but not the Northwest Territories), and interviewed a very large number of interested parties. The authors found that drug education included a number of "ideological ingredients" or major aims (paraphrased here) such as:

- The promotion and improvement of quality of life and health in the community.
- The development of individual physical, social, psychological, and spiritual health.

- The dispensing of knowledge about toxic substances.
- The clarification of values for young people, educators, and parents.
- The development of life skills.
- The humanization of the environment to make it more livable.

By far the most common aims seemed to be the dispensing of knowledge and the clarification of values. Unfortunately, it was concluded that "evaluation rests more on the intuition and perception of educators and others working in this field than on scientific studies." In fact, the authors were able to assemble only four evaluated programs, one of which dealt only with alcohol advertising. Hence we are not sure how many programs fulfilled their aims. There is a striking need for more research on educational programs in Canada.

RESEARCH RELEVANT TO DRUG EDUCATION

Although few programs have been evaluated, there is some interesting research which indicates how drug education should be planned. Much of it relates to the source from which drug education comes. There has been a great deal of criticism about inadequately prepared teachers and badly constructed materials (e.g., Le Dain, 1973) and about the general lack of sophistication in courses.

A study conducted with students in Toronto, Halifax, and Montreal (Fejer *et al.*, 1971) showed that drug education via the mass media was the most effective and influential. Those who did not use drugs relied on the media for information, but users tended to rely more on their friends. This finding suggests that media programs are most important in keeping non-users in that role, but a more personal program is needed for users. These findings were later replicated by the Le Dain Commission (1973) in a national study.

Later studies (Smart and Fejer, 1972; Fejer and Smart, 1975) confirmed these results with adults and extended them with studies of the credibility of different sources. Mass media were the most trusted source of information for students in general, but not for users, who depended more on friends and their own experiences. Church and school were relatively unimportant as sources. Scientists and doctors were trusted sources, but teachers in general were not. However, teachers with some special knowledge were credible. There is clearly a need to increase the expertise of teachers about drugs and to give them the training they require.

This research on most used and trusted sources of information shows that better use could be made of teachers and schools. It suggests that, given the heavy dependence of young people on mass media for information, special attention should be paid to ensuring that the media have accurate and complete information about drugs.

MASS MEDIA AND DRUG EDUCATION

There are many ways mass media can both help and hinder education about drugs. Since they are much used and trusted sources of information, they would be the vehicle for many helpful messages. They could be used to present information on adverse effects of drugs and to dissuade users from starting. One approach could be to mount special advertising campaigns or to work the material into dramatic, news, or special-affairs television programming. On the other hand, mass media may contribute to drug use through the large amount of advertising for over-the-counter products. Drug messages also come into programming which shows drug use in a positive light and perhaps indirectly suggests that people should give drugs a try. It is worth examining each kind of influence and trying to decide which is most important.

There is some evidence that the heavy drug content in the media is not always appreciated. A survey in 1971 (Special Senate Committee on Mass Media, 1971) showed that 54% of people in Canada thought that there was too much material in newspapers about drug use. Also, drug advertisements on television were found to be "the worst advertising" available (Steiner, 1961) in a study of audience attitudes. On grounds of taste alone, few drug advertisements would receive a high rating.

Anyone who watches television, goes to the movies, or reads a magazine is aware that these media carry both hidden and very clear messages about life and how to live it. We Canadians watch television for about three hours a day on the average, and trust it more than any other medium. Radios provide companionship in all situations remote from television. In addition, some magazines and newspapers are now in virtually all homes on a daily basis.

We know that media have an important role in the socialization of children (Hanneman and McEwen, 1975). Media, especially television, show aspects of the adult world not known to children and show how adults survive that world. They indicate how people behave in different contexts—family life, marriage, divorce, conflict of all types, and recreation—and indeed how they should behave. Although the media can be as influential in many situations as parents or teachers, we have relatively little control over them. Most media operations are businesses, not

public services, and much of what we read, see, and hear is produced in other countries.

PROMOTION OF DRUGS IN THE MASS MEDIA

Pro-drug messages frequently enter into both television programming and advertisements. For example, cannabis use is frequently referred to in positive ways in youth-oriented and family dramas or televised movies. Late-night talk show guests gently promote both cannabis and cocaine. On a (now cancelled) TV program a disk jockey frequently seemed to be alluding to the value of cocaine and was sometimes shown as if recovering from its effects.

There are numerous televised advertisements for headache pills, stomach aids, and minor painkillers. A typical advertisement shows a housewife harried by her unruly family at breakfast. She takes a headache pill and immediately becomes more serene; her hair is in place and her dress suddenly unrumpled. The obvious message is that we should buy the particular headache pill advertised, but there is a less obvious but more important message: that drug-taking can solve problems and even enhance our life. The same message frequently repeated in myriad ways in mass-media materials will probably have some influence on our general tendencies to use drugs.

There have been studies of drug messages on mass media in both Canada and the U.S.A., although they are now a little dated. Since our media is mostly imported from the U.S.A., these latter studies are probably valid for Canada as well. In 1971, Smart and Krakowski (1973) studied magazines and television programming available in Toronto. Out of 336 television viewing hours, only a few programs and 12 commercials contained cautions about drug use. On the other hand, there were 295 drug advertisements, or nearly one per hour. The 400 popular magazines surveyed showed somewhat different results. There were 80 articles about drugs, which concentrated on adolescent drug use and emphasized the effects of drugs but did not explore the causes of their use.

Studies in the U.S.A. have also contributed to our understanding (see Ostman, 1976, for a review). Hanneman and McEwen (1976) studied television programming and magazines in the mid-1970s. During programming, references to illicit drugs were less common than references to alcohol; the references were mostly neutral, and use was indicated as often as refusal. Humor was often associated with the mention of both alcohol and illicit drugs, which might be taken to indicate tacit acceptance of their use. Overt anti-drug messages were very uncommon both on television and in magazines. There were far more messages which promoted rather than warned about drug use and its conse-

quences. In general, the media help us to learn that chemical methods of solving problems are acceptable, and they present very little countervailing information about hazards. Children, because of their greater television viewing time, have more opportunity than adults to learn such messages.

Movies are also a medium for pro-drug messages. Movies extolling cannabis use have been very common in the past 10 years (see Winick and Winick, 1976, for a review). We think particularly of movies such as *Up in Smoke*, *Easy Rider*, *Foul Play*, several rock concert movies, and many B films made for the teenage market. Cocaine use has also been shown in positive terms in many films, for example, *Superfly* and *Atlantic City*. (The Canadian taxpayer is here presented with a strange anomaly in that some government funds were used to produce *Atlantic City*.)

Based on the above findings and/or intuition, we would expect that mass-media drug content would affect actual drug use. However, there appears to be little empirical evidence that this is the case. We are not sure that all those television advertisements for over-the-counter drugs really do contribute to illicit drug use. Actually studying the phenomenon would not be easy. In fact, much of our evidence, both in Canada and the U.S.A. (Annis, 1974; Kandel, 1980), shows that peer and family influences are most important in adolescent drug use. Whether mass-media exposure can contribute something in addition is not known at present, although intuitively we expect that it would.

WHAT CAN BE DONE ABOUT DRUGS IN THE MASS MEDIA?

Uncertainty about how pernicious the mass media really are has led to confusion among policy-makers as to what to do about drugs. There has been no national or local initiative to limit drug advertising, the references to drugs on television, or the frequent pro-drug movies. Government agencies in the U.S.A. have attempted to have cautionary public service announcements about drugs introduced on television (Hanneman and McEwen, 1976). Many of these tend to be of short duration and televised at hours not desired by other advertisers, such as Sunday morning. However, some prime-time warnings from athletes about drugs are now being given during sporting events; there is no evaluation of their effectiveness or exposure, but since they are infrequent they could not be expected to have a large effect.

Many people question the feasibility of any large anti-drug program in the mass media. Any such program would be extremely expensive: prime-time exposure on a national level can cost several thousand

dollars a minute, in addition to program production costs. There has also been some evidence (Brecher, 1972) that drug education through the mass media has promoted some kinds of use. For example, the wave of interest in glue sniffing in the U.S.A. has been shown to be related to well-intentioned but explicit information given in newspapers and on television. Apparently, many young people were simply not aware that plastic glue could be sniffed, and the "drug education" provided specific directions on how to do it. This problem, of course, applies only to newer drugs and not cannabis or the well-known hallucinogens, and it applies only to education which gives directions for use. There is a clear need for anti-drug information programs which suggest that drug use is in no way normal, interesting, or exciting.

Another problem is to understand what can reasonably be expected of mass-media education programs. Much of the data and argument relevant to this problem have been recently reviewed by a task force in *Alcohol: Public Education and Social Policy* (Addiction Research Foundation, 1981a). This task force found no evidence that mass-media education about alcohol, drugs, or a variety of other health matters had any substantial effect on people's behavior. Research on the topic was simply not very good or convincing in its findings. However, much evidence indicates that mass media can influence people's awareness, knowledge levels, and attitudes. Unfortunately, it is not clear that positive changes in knowledge or attitude about drugs actually make people more cautious about using them. Much research shows that drug users have more knowledge than non-users (see Goodstadt, 1980, for a review). Mass media seem best at supporting existing attitudes, norms, and behavior, and there is little evidence that they can cause major shifts (Klapper, 1960). With all of this in mind, it is difficult to advocate large-scale mass-media education as a panacea for the drug problem or even to give it a strong role in a total program. No large mass-media program about illicit drugs has ever been undertaken in Canada, and none is likely for the near future.

DRUG EDUCATION IN SCHOOLS

Drug use and abuse are frequently seen as topics for schools to handle, along with their more traditional role of teaching basic skills and preparing people for careers. There has been a consistent postwar trend to expect schools to deal with all manner of social and family problems through "education." Schools are often not prepared for their new role; nor are many teachers comfortable teaching about drugs, sex, family organization, and the like. Nevertheless, drug education has become part of many curricula, often in health or science programs. Some of the new tasks for schools—for example, driver education—have been carried out in school facilities by experts brought in for the purpose.

However, drug education in schools is typically done by regular classroom teachers, and in Canada, as elsewhere, it has had many problems and few successes.

Some of the negative aspects of drug education have already been mentioned. Drug users seem to have more information than non-users, and hence education for them is superfluous. Studies from the U.S.A. (Macro Systems, 1972) and England (Swift *et al.*, 1974) seem to show that drug education has little effect in helping users to stop. Most who stopped did so because they intended only to try drugs once or twice or because their friends stopped.

A study in Ontario (Goodstadt *et al.*, 1977) found that cannabis users usually had more exposure to drug education than non-users, although this relationship did not apply to other drugs. The data in all of these studies come from reports of students and hence is correlational rather than causal. For example, it does not prove that drug education makes people use drugs.

Even more disturbing are the experimental studies of drug education which shows negative effects—that is, more drug use or less desirable attitudes among those who received the education than in control groups who did not. Much publicity has been given to these findings, and as a result many schools are reluctant to get further involved. Goodstadt (1980) has carefully reviewed much of the work on negative effects, including one study from Canada, and the conclusions are not so depressing as expected. The negative findings are rare—no more than 15% of experimental studies. Also, all of these involve mixed findings: that is, positive effects for some subgroups and negative for others. Virtually all have methodological problems such as small sample sizes, non-random assignment of subjects, poor measuring devices, and “low intensity” or short programs. It is possible that negative results follow inadequately assessed programs. However, educators may have to accept the risk of some negative effects. Just as we find untoward effects in other types of education—some early school dropout, some failed courses, unwanted pregnancies among those exposed to sex education—we can expect the same in school drug education. We can improve our education and perhaps lower our expectations about what schools can realistically achieve. A few negative effects should not lead us to give up.

CURRENT PROGRAMS OF DRUG EDUCATION IN CANADIAN SCHOOLS

No national survey of drug education in schools seems to exist. The UNESCO report of 1974 referred to school programs but made a selec-

tive rather than an exhaustive study. Also the Le Dain Commission (1972a, 1973) dealt summarily with drug education in its reports. The commissioners reviewed a number of drug education programs in person and indirectly, but the results of these reviews were not presented. The Commission did conclude that most Canadian drug education occurred at the junior high school level and was poorly presented. Teachers were said to be ill prepared and students unimpressed. The need for better courses was stressed, as was the need for more evaluation. Unfortunately, we do not know how much school drug education exists in Canada, how well it is done, what its effects might be, or what problems have arisen.

Fortunately, detailed information about drug education exists for Ontario. Much of it is probably relevant to the rest of Canada, especially the problems encountered and major relationships among variables. Goodstadt *et al.*, (1978) showed that many Ontario students (grades 7-13) received no drug education, and many who did had only one or two classes. Reported exposure to drug education was greater among students in higher grades, those with high grade averages, and users of cannabis, tobacco, and alcohol. There was variation in the amount of exposure to drug education in different areas of the province. Alcohol was the drug most often covered. Students preferred presentations by experts and ex-addicts or current users, but most often what they had were teacher-led classes.

A series of studies (Goodstadt *et al.*, 1978; Sheppard, 1981; Sheppard *et al.*, 1981) has shown that drug education is *not* becoming more popular. In 1977 about 57% of students had had drug education in the previous year, 54% in 1979, and 59% in 1981. Some upper limit to its coverage is probably determined by its placement within the curriculum. The Ontario Ministry of Education guidelines require the teaching of drug education in courses in Physical Education. However, not all high school students take Physical Education; and if they do, drug education is not a large part of the course. Also, each board of education is free to interpret the guidelines in its own way, providing courses and relevant teacher training for drug education as for other topics. However, in a survey by Sheppard (1981), 48% of Ontario school boards indicated that they had no curriculum for drug education. Although some were in the process of developing programs, only 15% had complete courses. Far more public than separate (Catholic) school boards had drug education programs.

Apparently, drug education has a low priority with many school boards, schools, teachers, and students. This view follows in part from the expectation of little or even negative results and from problems in training teachers to present the topic effectively. Unfortunately, much drug education has been uninspired and either spasmodically or poorly

presented. Nevertheless, it is much too early to give up on school drug education. There have been many positive programs with good results (see Goodstadt, 1976, 1980, for reviews), and better programs could improve the outcomes. If we turn our backs on schools as an arena for drug education, we would be left with few alternatives, all of them more costly and more difficult to implement. Only the school provides a setting for consistent socialization, for teaching important values and behavioral standards to the whole population of young people. If we decide to abandon drug education, we are left to depend on socialization within the family and the peer group, which may or may not provide the needed knowledge and values with the needed consistency. Schools and teachers can be encouraged to utilize better and larger programs when we have them to offer.

SOME EVALUATED PROGRAMS OF DRUG EDUCATION IN CANADA

Despite an air of pessimism about drug education, it is possible to describe a few successful programs in Canada. In some cases the results have not been very striking or have been mixed, but they show that limited success is possible. There are numerous studies of materials used in drug education such as films, tapes, and printed materials, but few evaluated programs. While there are several positive evaluations of alcohol programs (Goodstadt, 1980), our concern here is with illicit drugs.

A Public Service Radio Campaign

Goodstadt and Kronitz (1977) evaluated an eight-week public service campaign dealing with alcohol and drugs. Materials for eight radio "spots" were distributed to all 118 radio stations in Ontario. About 60% of the stations aired the spots and averaged about 13 spots per week. Most stations used all eight spots and played them during both prime and non-prime time. This study does suggest that a good level of exposure can be gained from public service spots when sophisticated materials are given to radio stations. Of course, it is not known how many people listened to the spots, but estimates could be made from audience data.

A Peer-Group Approach to Drug Education

Smart *et al.* (1976) compared a peer-run drug education program in grade 9 with a no-treatment control. It was expected that the peer-run program would have a more positive effect on attitudes and knowledge because of the higher credibility of peers compared to teachers. Specially trained students gave the classes, which were primarily about cannabis and LSD. The evaluation indicated that the peer-run program led to more knowledge about drugs, but there was no

improvement in attitudes or reported drug use. Part of the lack of success was attributed to the inadequate preparation of the student leaders and the large number of classes they had to teach. If they had been better prepared and concentrated on fewer classes, the results might have been more positive.

A Communications Consultant for Schools

Few studies have examined the relationship of the school environment to drug use and how to change it in a positive direction. However, Shain *et al.* (1977) reported a study in which a consultant took on these tasks. The consultant worked in a high school with teachers and the principal over many months. His job was to study the school as an organization and to study teachers' and students' attitudes towards education, drugs, and discipline. Results were to be given to teachers so as to help them clarify their attitudes and goals. It was found that as a result of the consultant's efforts, teacher attitudes about education became more liberal while attitudes about drug use did not. Teacher values became clarified and more consistent. Comparable changes were not found in a nearby school which had no consultant.

THE NEED FOR DRUG EDUCATION RESEARCH IN SCHOOLS

Of the few evaluated programs of drug education in Canada, none has been shown to actually decrease drug use or intentions to use drugs. Most do have effects on values or knowledge levels. Of course, knowledge and values have a questionable relationship to actual drug use. What will be needed in the future will be highly sophisticated programs of long duration, plus the teachers able to present them well and the school systems ready to accept them. Probably, courses will be needed which are based on some compelling theories of both education and adolescents' motivation to use drugs. Special courses may be needed for drug users in order to dissuade them from continuing and for non-users to keep them from starting.

An interesting research study has been developed by Goodstadt and his colleagues at the Addiction Research Foundation. It includes the development and testing of a program for cannabis education in schools. Several approaches to teaching about cannabis are tried: one describes the legal consequences, another the health consequences, and a third integrates both types. The research is based on the assumption that people do what they consider healthy and are deterred from doing what will bring them punishment. At the time of writing, this research has not been completed; however, it represents a promising avenue for several reasons. Cannabis is the most important illicit drug; therefore, interest

on the part of teachers, students, and school boards in an effective program should be greater than for most kinds of drug education. Also, teachers will be trained to make the course presentations, and eventually curricula will be developed in the form that is most helpful, and hence most acceptable, to the teachers.

NEW DIRECTIONS IN DRUG EDUCATION: THE NEED FOR A SOCIAL MOVEMENT

Only the optimistic could feel that drug education, as now known, has a great future. We can see that evidence is lacking that mass-media or school-based programs can reliably decrease drug use. Drug education seems to have a low level of acceptability in many schools, and prospects for increasing exposure in mass media are limited by costs as well as other factors. An important new direction will be to associate drug education with significant social movements, of which the best known in recent years are probably the feminist or women's movement and the health and fitness movement. These movements fill important social needs and have an energy of their own far beyond what government intervention could stimulate, although governments may encourage them. Both of these movements have a point of view concerning drugs. The women's movement, for example, takes a stand against the over-prescribing of tranquillizers to women. The fitness movement, of course, does not see physical health and energy as compatible with drug use.

Another possibility is the development of some sort of anti-drug or perhaps anti-cannabis movement among young people themselves. This should not be seen as too far fetched: there was a major anti-alcohol movement among Canadian youth in the early 1900s. There are also indications that an "anti-speed movement among Canadian youth in the 1970s contributed to the near disappearance of speed. As the adverse consequences of cannabis use become better known, the likelihood of such a movement is greatly increased.

Striking changes in social policy and public attitudes in controversial areas have often been noted in Canadian society—for example, toward alcohol prohibition, abortion, pornography, and smoking. Winick (1978) has investigated five areas of social change in the U.S.A. where both public attitudes and government policy made almost complete reversals: abortion, pornography, rehabilitation of criminals, violence on television, and homosexuality. He found that in all five areas social change was preceded by:

- The creation of constituency or interest group which argues strongly for change.

- Identification of a large number of people who are hurt by the existing policies or attitudes.
- Widely published reports of a major research study from an impeccable source which leads to smaller studies in a ripple effect.
- A large amount of popular and media attention devoted to the issue and to the research studies.
- Increased public and professional acceptance of new policies and attitudes.

When drug abuse policies are considered, it is clear that several of these requirements have not been met. There is no interest group arguing for a major change in societal attitudes about drugs, and there has been no identification of large numbers of victims, although the number is growing with regard to cannabis. Research studies on the adverse effects of cannabis are accumulating (Addiction Research Foundation/World Health Organization, 1981) and are receiving media coverage. What is required now is the development of opinion leaders or interest groups to actually discourage drug use and to promote the use of drug education in schools and the mass media.

SUMMARY

There is an expectation that social or health problems such as drug abuse can be solved by education in the form of information programs in schools or the mass media. The evidence indicates that school-based programs may have mixed and sometimes negative effects, although positive results are more common. School programs appear to be inconsistently and inadequately applied in Canada. Drugs are also promoted in the mass media through both programming and advertising. Youth-oriented movies often present drug use—especially cannabis use—in a positive light. Although some interesting programs have been evaluated, there is little reason to expect that mass-media education could have a marked effect on drug use. A similar conclusion is justified for school-based programs. Research on school programs should continue, as schools represent the best area for educational effort. However, social movements have traditionally been more important in changing public attitudes and behavior in social problem areas. All the ingredients for a social movement against drug use do not appear to be manifest currently, although there are a few of them appearing in Canada.

The Role of Parents

Since most illicit drug use involves young people, their parents are very likely to be the first to have to deal with its consequences. They may have merely to watch as their adolescent engages in a short-lived experimental fling with cannabis or LSD. More serious consequences can be a drastic change in lifestyle: the child changes friends so as to associate only with drug users, or drops out of school or (almost as bad) stays in school but loses all interest in it. Serious cases of addiction and dependency will require professional treatment. Most parents of teenagers are *not* well equipped to deal with drug-related crises. Drug use was not a feature of young peoples' lives when the parents were students, and the whole drug use phenomenon can seem foreign to them and very frightening. Nevertheless, parents are never powerless in such circumstances, although they may feel that they are. Parents can always give help and advice, or they can arrange for counseling or treatment when it is necessary.

Much of what parents can best do about drugs should be done in advance of any crisis. Parents can learn more about drugs, they can be sensitive to the signs of early use, and they can keep communications open between themselves and teenagers about drugs. Lastly, they can know where to turn for treatment of serious drug problems such as overdose or addiction or other consequences.

WHY ARE PARENTS IMPORTANT?

The question requires some examination, for many young drug users would claim that parents are irrelevant. However, much research indicates that drug use is more likely to occur in families where parents use alcohol and other drugs such as tranquillizers. Parents need to be sensitive as to whether they are developing a drug-tolerant family environment where "a pill for every ill" gets to be the norm. Unfortunately, we do not know whether parents' changing their ways to a cautious and conservative attitude toward using drugs can actually pre-

vent or stop the use of drugs by their children, but it is likely to help more than hinder.

Usually, parents are not users of illicit drugs except for cannabis. About 3.1% of adults in the age group most likely to have teenage children (30–49) have used cannabis in the past year (Smart and Adlaf, 1982b). People who were part of the hippie generation of the late 1960s are beginning to be old enough to have teenage children. In many cases the earlier attitudes of these parents to drugs and their experimentation will be known to their children. We have no studies of these parents, but there are a few instances reported where their children have had severe problems with heavy drug use. Parents who themselves use cannabis and other illicit drugs can expect to see the same among their children.

We should remember that in many groups of young people, cannabis use is the norm and not the exception. Parents then may be the primary source of information about drugs that does not come from the drug subculture itself.

HOW CAN PARENTS RECOGNIZE DRUG USE OR ITS PROBLEMS?

Not much research has been done directly on this topic. What wisdom we have comes from clinical signs typical of drug users, as well as common sense and a little knowledge about how drugs are used. We know that drug users usually have friends who are users. Parents who know, or suspect, that a particular close friend of their teenager is a user can expect that their teenager will also try drugs. There is, of course, no certainty that this will happen but only the likelihood. Young people who speak highly of drugs or their good effects, or insist that they should be made legal, are also likely to be users. Much research has also identified the social and personality characteristics of young people most likely to be cannabis users (see chapter 2 for a more comprehensive review). In general, drug use is more likely in young people, especially males, who are having difficulty in school, those who use alcohol and tobacco, and those who are precocious in other areas such as sexual behavior. There is some tendency for greater cannabis use among those who are politically and economically less conservative in their values, and among those who feel alienated from society. Probably none of these characteristics, nor all taken together, are perfect predictors of future drug use, but they should be of help to parents who are sensitive to such things. Unfortunately, being able to identify many of them calls for a high level of communication with young people, which many parents do not have.

Some physical signs of drug use can also be spotted. For example, chronic sore eyes or conjunctivitis is characteristic of heavy cannabis

users, although acute conjunctivitis can occur after only one smoking session. Heavy cannabis users also have a chronic cough and may be very vulnerable to minor infections. Finding cannabis itself or cigarette papers in clothing or other possessions cannot be ignored. In some cases heightened irritability or aggressiveness may be a sign of chronic cannabis use. In the case of drugs which are injected, users have injection tracks or needle marks on their arms. Glue or solvent users may appear intoxicated or smell of the solvents.

Other kinds of drug use may be occasionally identified indirectly. The presence of plastic glue or plastic bags for which there is no obvious use should provoke inquiry. Of course, heroin addicts' "fixings," such as syringes, needles, or bent and burnt spoons, would be indications as well. The unexplained presence of pills, ampoules, or blotting paper (used for LSD) may indicate drug use.

Many kinds of drug use are extremely difficult for parents to detect, especially if use is infrequent. Much drug use occurs away from home and parents—in homes of friends, at school, in parks, or on summer vacations. Parents are likely to detect only the most blatant or obvious forms of use. They may detect surreptitious use only when the young person wishes it to be detected. Many young people will, of course, tell parents about their use of drugs—especially cannabis. Communication must be the best way to find out; it is the most reliable and the most often used. There is no substitute for good communication.

WHAT DO PARENTS NEED TO KNOW ABOUT DRUGS?

Few parents will want or need to become experts about drugs, particularly the pharmacological and biochemical aspects. Nearly all parents will know something directly about alcohol and tobacco. They need to know as well something of the major drug effects especially of cannabis, LSD, and stimulants, the most commonly used of the illicit drugs. Information about drugs can be acquired from various sources. Every province has a provincial agency which deals with drug concerns and provides information on drug effects and how to cope with problems. Most public libraries also contain information on drugs. Other sources will include family physicians and other parents who have had drug problems in their own families.

Parents' knowledge should extend beyond the effects of drugs into an awareness of how drugs are used and what problems they can lead to. Parents should remember the following:

- That drug use—especially cannabis use—is common and nor-

mative behavior for young people, especially males aged between 16 and 20. If their teenager is using cannabis, it is in no sense bizarre or unusual for the age group, although it may well be irritating, disappointing, or just plain perplexing to the parents. Parents must try to avoid the feeling that it is a tragedy or disaster. Probably it is not.

- There is no high school which is free of drug use, and probably no grade or class with students between the ages 16 to 18 which has no drug users. The commonly used drugs such as cannabis and LSD are readily available at moderate cost to almost all young people. Efforts to find a drug-free environment for teenagers are probably wasted.
- In Canada the critical age for starting to use cannabis is 16 to 17, and for glue and other solvents about 13 to 14. These are the ages where young people are starting to grow away from their parents and to take more and more of their direction from their peer group.
- Most young people who start using drugs will use them infrequently and will not develop problems with them. The only drug that involves frequent use by any proportion of users is cannabis. For most young people, use of other illicit drugs—solvents, LSD, PCP—is experimental and infrequent. For most, it represents a phase which will be passed eventually and without serious problems.
- Signs of serious problems with drugs include academic difficulties at school, school dropout, excessive absences from home, and some escalation in drug use—from the less dangerous to the more dangerous drugs (such as from cannabis to LSD or injectable drugs) or from infrequent to daily use.
- The heaviest use of drugs occurs among people who have heavy-using friends. It is often difficult to modify a heavy use pattern without getting the teenager to change friends. A major effort should be made to encourage association with non-users or light-users and to limit the teenager's contacts with the heavy-using group.
- Daily use of any drug, even cannabis, is very likely to lead to problems. Virtually all drug-dependent persons take their drug every day. Daily drug users are almost certain to need counseling or treatment.

FAMILIES OF ADOLESCENT DRUG USERS

Much research has been done on the parents and families of illicit

drug users (see Glynn, 1981, for a review). As would be expected, such families show signs of maladjustment, strain, and poor organization. They more commonly have been disrupted by death or by divorce and separation. Relationships between parents are often reported to be poor and communication inadequate. Many drug users' families include a dominant mother and a distant, insignificant, or even absent father. Parental control and discipline have often been reported to be lax or inconsistent. Drug users also frequently report that their parents treat them with hostility and that physical punishment was often given when they were young. Virtually all of this research has been done in the United States, but probably the major findings could be generalized to Canada. The research indicates overall that the families of heavy drug users have multiple problems and that some form of family therapy is often needed.

WHAT CAN PARENTS DO IF THEIR TEENAGERS ARE USING DRUGS?

Usually drug use by teenagers comes as a shock to parents. The parents' best approach is to attempt to overcome the initial shock reaction and develop some rational plan of action. They should try during the shock phase not to take any precipitous action which will later be regretted. Parents should always remember that they have options in these situations and be determined not to panic into accepting one course of action without deliberation. The various options are: ignore the problem; talk it out; take a strict-controls or "toughlove" approach; call police; or, in the most serious cases, try to arrange treatment. Each approach is worth considering in light of the actual situation.

Ignore It

Many parents prefer to ignore drug use on the part of their teenagers. They may be too busy and preoccupied with their own problems or with more serious family problems. The drug use may be just one more instance of deviant behavior by a teenager who is almost totally isolated from the family. Family members may think the teenager is not worth the trouble involved in confronting the issue.

Other parents may see drug use as a minor peccadillo, certain to pass away with other youthful excesses. They may be reluctant to make an issue of something so minor as a little marijuana smoking. Indeed, most youthful drug use seems to pass without much ill effect. However, it is difficult for anyone—including parents—to be sure exactly which young people will be drawn into heavier use and later problems. Ignoring drug use on the assumption that it will go away naturally can be very risky and cannot be recommended.

Talk It Out

Most parents have sufficient communication with their teenagers that they could talk about drug use. Probably neither party will find the topic an attractive one at the outset. Provided the teenager is not under the effects or after-effects of drugs at the time, talking it out can often be helpful. Parents need to establish their attitudes and values about drugs with their children. They need to warn them about the legal consequences of drug use, the adverse physical consequences of use, and the probable consequences of continued use. Such warnings may be heeded, or may be ignored initially but heeded later.

In some cases, parents will want to explore the reasons why their teenagers are using drugs. The teenagers will want to establish their views about drugs, explain their motivation, and talk about pressures to use drugs. Often the reasons are no more deep than curiosity or peer pressure to try out "a little pot" or a little something else. However, they may involve dissatisfaction with the situation at home or school, the undue influence of a few friends, or other factors which can easily be changed. In cases where parents discover that drug use has been going on for a long time or that there is daily use or use of injectable drugs such as heroin, some professional treatment will be required. The best method for finding it will be through the family physician or one of the provincial agencies for alcohol and drug problems. Many such agencies have discussion groups for parents and will provide family counseling as well as treatment.

In "talking it out," parents should not neglect opportunities to talk to other parents. Illicit drug use among young people is so common that many parents now have some direct or indirect experience. Parents of older teenagers have often developed useful coping mechanisms or have at least weathered the storm successfully. They should be consulted at an early stage.

Various courses have been established for parents to improve their abilities to "talk out" drug use problems with their children. The best known of these is probably "Parent Effectiveness Training" (Gordon, 1970), which emphasizes training in effective listening, constructive confrontation, and problem-solving. A course on Parent Effectiveness Training has been given to parents in the Niagara County area and a detailed evaluation made by Shain *et al.* (1977). It was found that while there were no strong effects on drug use, the course did improve communication between parents and teenagers.

The "Toughlove" Approach

In the past few years a stricter approach has been developed for dealing with teenage problems, including drug use. "Toughlove" involves just what it suggests. Parents establish with their teenager that they love the teenager and the love will continue, but they are putting limits on the sort of behavior they will tolerate. The program was developed by Phyllis and David York, two parents in Pennsylvania who became tired of drug use and other delinquencies on the part of their children. "Toughlove" is based on the idea that parents with troubled teenagers feel lonely, guilty, and helpless and get little help from professionals or experts. The "toughlove" approach involves joining a group in the community of parents having similar problems. It provides manuals on "how to do it" and other printed materials, trains parents in the approach, and creates a network of parents who will support each other in the work (Toughlove Associates, 1982; Toughlove Community Service Foundation, 1982). The emphasis is not on psychological or insightful approaches but on establishing rules, making them known to the teenager, enforcing them, and providing consequences when they are broken. Parents provide help for each other in various ways. For example, if a teenager is late coming home at night, they might put a sign on the door saying: "It's past midnight. You are not welcome here. Go to Mr. and Mrs. Smith's (neighbors who are in the Toughlove network). We will discuss it tomorrow." "Toughlove" requires that the teenager obey certain rules about continuing in school or work, keeping certain hours, not associating with undesirable friends, and not using drugs. Failure to keep the established rules means that the teenager will have to move out and support himself. In the toughest approaches, time limits and regular reviews of performance are clearly set out. Usually, the "toughlove" approach is adopted by parents after softer approaches such as "talking it out" or treatment have failed.

The "toughlove" movement is only about four years old but seems to be growing. There are currently over 150 branches in the United States, each with 20 to 50 participants. There are also branches in several large cities in Canada. At present we are not sure whether "toughlove" can really modify drug use, especially in heavy users. However, the approach does allow parents to set limits on how much they are willing to put up with and clearly outlines what will be expected. Parents may find it difficult to adopt a tough approach after many years of being "soft." Actually enforcing the "tough" part may be more difficult than they expect and may provoke many fights and emotional scenes. However, many parents have found that it pays off. It is an option that is being considered for hard-core drug cases. The "tough" requirements may seem unusual in family situations, but they are not nearly so strict as those in therapeutic communities or many treatment centres for drug users, or, for that matter, in prison.

SUMMARY

Parents are often called upon to react to drug use among teenagers and to solve the attendant problems. Frequently, they are ill equipped to do so. Parents of teenagers should acquire some information about drugs before the problem begins. They can often recognize drug use in young people by physical symptoms, presence of drug-using apparatus, or more subtly by changes in school performance. Parents should be aware that much, but not all, drug use is temporary. Signs of serious drug use involve school dropout, escalation to injectable drugs, or daily use. Many options are available to parents for dealing with drug problems. They can ignore it, talk it out, or seek treatment. Some parents will want to take a stricter “toughlove” approach, involving strict rules and performance standards for their child.

The Treatment of Drug Abuse

Every modern society, including Canada, offers treatment to drug abusers and some societies even force it upon them. The nature of the treatment and its availability vary greatly from one country to another as well as within the same country. Treatment refers to any organized efforts to provide professional or non-professional help in ameliorating the effects of drug use or abuse. It is offered for humanitarian reasons—to alleviate the suffering of drug-dependent people and to prevent further suffering. We know that drug abuse of all sorts has an epidemic or contagious nature. That is, use spreads from one person or group to another. We know, for example, that drug abuse runs in families and follows peer and friendship patterns. The fewer users there are, the less likely it is that new cases will develop. Research has shown (Hughes and Crawford, 1972) that identifying and getting drug abusers into successful treatment programs is important in preventing the expansion of drug-abuse epidemics or waves. Early identification and treatment can also prevent the development of full-blown addiction. Even treatment at the later stage can prevent some social, economic, or family problems, or at least limit their duration.

Many drug abusers receive help and advice from their friends and relatives, but we know little about how much they get or how useful it is. For our purposes, we will not call this treatment but confine that term to the efforts of individuals, clinics, hospitals, and centres whose specific job it is to provide help. While some agencies are specifically established to treat drug abuse, others, such as general or psychiatric hospitals, have a wider mandate. Probably at some time virtually all health professionals and agencies provide treatment for drug abusers. The purposes of this chapter are to examine the types of treatment facilities in Canada, the characteristics of those who use them, the effectiveness of treatment as now given, and what is needed by way of new facilities and approaches.

Drug abusers require a large variety of treatment interventions. Some need only advice or consultation about how to deal with various

drug problems of a minor nature. This may be professional advice on sterile injection practices or advice from drop-in centres on legal, social, or employment problems. Treatment includes help in dealing with:

- Emergency medical conditions resulting from the toxic effects of drugs or the method of administration, such as stupor, shock, delirium, or convulsions,
- Psychiatric conditions resulting from adverse reactions, such as fear, panic, or paranoia,
- Medical complications of prolonged drug use, such as hepatitis, abscesses, thrombosis,
- Prolonged psychiatric complications, such as psychosis, paranoia, or depression or flashbacks to earlier drug experiences,
- Severe withdrawal symptoms such as aches, pains, convulsions, or tremor,
- The basic conditions of dependency, including drug craving, addiction, and tolerance,
- The basic socio-psychological problems which provide the original motivation for addiction and the lifestyles which support it.

The above list includes a variety of short-term palliative types of treatments and a few (the last) which are oriented toward changing or curing the drug problem itself. It is with curative treatment that we are most concerned here. Manuals for the medical treatment of toxic and adverse reactions have been prepared (Le Dain, 1972a), and the clinical procedures for their management seem well developed. However, treatment in the broader sense of curing addiction or dependency has not been established, and many controversies exist about its ideal or even acceptable forms.

TREATMENT FACILITIES IN CANADA

Curative treatment for drug abusers has taken a variety of forms. A useful dichotomy is often made between drug-bound (pharmacological) and drug-free approaches. In pharmacological approaches, drugs such as tranquillizers are given to aid in the withdrawal from the addictive drug and to help maintain the drug-free state. Maintenance approaches involve the use of a narcotic such as methadone to substitute for the narcotic of addiction. Drug-free approaches usually involve therapeutic communities which provide a drug-free environment. Both types of approach may involve psychiatric and psychosocial support such as family or employment counseling, rehabilitation, and the like. In Canada, the main types of treatment are methadone maintenance and

therapeutic communities for narcotic addiction and a variety of hospital-based treatments for other types of addiction.

METHADONE PROGRAMS

Methadone is a synthetic opiate which can be used as a substitute for heroin or another opiate during addiction treatment programs. Since it is of the same drug family, a patient can be switched from the opiate of addiction to methadone without undergoing withdrawal. It was used by Dole *et al.* (1968) to treat "narcotic craving" and found to be extremely successful in treating American addicts. Initially most programs, including those in Canada, gave very large "blockage" doses on the assumption that the drug would prevent patients' experiencing the desired effects of heroin and thus discourage their heroin use. It was expected that patients would remain on these doses forever. However, it was soon found that methadone is itself highly addictive, and that high doses presented their own serious problems of withdrawal. Also, addicts often continued their use of other drugs such as alcohol, barbiturates, and other narcotics while on methadone and occasionally sold part of their methadone supply (Henry, 1974; Platt and Labate, 1976). Programs have now changed to involve lower methadone levels, which allow gradual withdrawal without distress, and to be short-term.

Methadone has several advantages as the substitute opiate of choice. First, it is effective when taken orally. By contrast, heroin and morphine are broken down in the digestive process and lose most of their potency, and so are almost always injected, with the attendant tissue damage and risk of infection. Second, methadone has a long duration of action, such that a dose need be taken only once a day. Injected opiates, by comparison, produce their effects rapidly, but these wear off in a few hours and withdrawal begins unless more drug is administered. Third, the chance of a patient putting together a constructive life is greater when drug-associated activities are limited to taking a daily oral dose rather than the round of hustling, buying, injecting, avoiding withdrawal, and avoiding arrest.

Methadone maintenance programs take a variety of forms. Although most cases are treated in clinics or hospitals, some are still maintained by individual physicians. Apparently, there were 10 clinic- or hospital-based methadone programs in Canada in 1976 (Reid and Chappel, 1979); the precise number is unknown for 1983. Also, some 181 physicians are allowed to prescribe methadone for treatment of narcotic addiction. The majority of narcotic addicts receiving methadone are treated in the services of the Narcotic Addiction Foundation of British Columbia or the Addiction Research Foundation of Ontario. The

number treated by private physicians is unknown. The B.C. program began in 1963 and the Ontario program in 1970.

The B.C. and Ontario programs have a roughly similar structure. Both take only narcotic addicts who are voluntary patients. Treatment is on an in-patient or an out-patient basis. Psychological and dependency assessments are done to determine the types of social, psychological, and addictive problems brought by each patient. The dose of methadone to be administered is determined individually for each patient according to the patient's need and the clinic policy. In the Ontario program, low doses are given—60 mg is the maximum and 25 mg is the average; the aim is gradual withdrawal from the methadone within about six months. In British Columbia, some older patients are being maintained on methadone over an indefinite period, but new cases are being given short-term maintenance aimed at full withdrawal. Both programs offer a variety of supportive psychiatric rehabilitative and counseling services in addition to methadone—hence they involve both pharmacological and non-pharmacological elements.

The aims of current methadone programs are to provide a bridge between narcotic addiction and a normal life. Short-term methadone maintenance is expected to allow addicts to solve their social and other problems leading to drug addiction and to develop the necessary skills for a drug-free life. Of course, these changes do not flow directly from taking methadone but hopefully from the other therapeutic interventions and from changes in the addicts' lifestyle—for example, getting a job, and getting rid of drug-addicted friends. Long-term methadone maintenance, now rare in Canada, is expected to wean addicts away from street drugs and allow them to develop stable patterns of work, family, and social life. In some programs addicts are able to take methadone for as long as they wish, even for their lifetime.

THERAPEUTIC COMMUNITIES

Therapeutic communities for addicts have a variety of characteristics which differentiate them from other programs (for reviews see Glasscote *et al.*, 1972; Smart, 1976; and Brook and Whitehead, 1980). Almost all are residential treatment centres established by former addicts, and they rely largely on ex-addicts, especially their own graduates, for staffing. They are drug-free programs and usually expel residents for narcotics use. Most are rather strictly run, with a heavy emphasis on conformity to rules and public punishment for transgressions. There is a strong emphasis on addicts' accepting responsibility for their own behavior, which is often called "stupid" rather than "sick" as in professionally run programs. Much of the therapeutic activity takes place in encounter groups which stress honesty, direct confrontation, and

criticism of each other's behavior. Some therapeutic communities value and emphasize their non-professional management, and others involve professionals both as managers and consultants.

The earliest and perhaps best-known therapeutic community for addicts was Synanon, founded by a former alcoholic in California. Synanon is aggressively anti-drug in orientation. It emphasizes confrontation, attack therapy, and work for all group members. A large number of Synanon groups have been established in the United States, and similar groups in Canada and England. Many Synanon graduates seem to be employed in Synanon programs and related industries.

Daytop Village was established in New York City by former Synanon staff and graduates. There is an emphasis on the "here and now" problems of addiction, rather than past mistakes. Treatment involves socialization within a residential setting and help in returning to the straight society via rehabilitation and help with social readjustment. No drugs are used, and the program is run by non-professionals.

Several therapeutic communities utilize professional and non-professional staff. The Odyssey House Program in New York has many similarities to Daytop, but there is a large amount of time spent with psychiatrists and psychologists in both group and individual sessions. Phoenix House, also in New York, utilizes both ex-addicts and professionals such as psychiatrists, psychologists, and nurses in its programs.

There have never been more than a few dozen therapeutic communities in Canada. The best known of these is probably X-Kalay, which was established in Vancouver in 1968. In 1972 there were 120 people in the program, and a total of about 300 had been treated. The program is based upon Synanon principles, with much emphasis put on the "game," a group encounter system marked by "directness, honesty, attack" (Le Dain, 1972b). Like Synanon, the program tries to be self-sufficient and does not try to return people to society but to integrate them into a viable community of its own making. Several other approaches, including "Boulder Bay," a wilderness camp in B.C., and "Head and Hands," a rehabilitative centre in Montreal based on psychotherapy, have been established for heroin addicts. Typically, therapeutic community programs in Canada have been small, often isolated, and inadequately financed. Frequently they cease operation after a few years without leaving any detailed description of their programs or data on their success rates.

One of the most fully described therapeutic communities is "414," a program designed for speed addicts in London, Ontario (Brook and Whitehead, 1980). It accepted only speed addicts, although many were multiple-drug users. The program was based on the Daytop model and

had extensive involvement of professional staff and management. The basic concepts were what Brook and Whitehead (1980) have called the "colloquialisms" of the therapeutic community movement. They are: "no copouts" (take responsibility for your behavior); "act as if" (act the way you think you should ideally even if you don't feel prepared for it); "turn around" (define your life goals in keeping with your beliefs); and "no free lunch" (do your share in the community). The "414" community was terminated in 1973 as the need for the service decreased and sufficient information had been acquired on how such communities function and on the characteristics of the residents.

PATIENTS IN TREATMENT IN CANADA

It is difficult to determine just how many drug-dependent people are treated in Canada, what treatment they receive, and what their characteristics are. Of course, treatment is typically given by many agencies that are provincially or locally funded rather than federally funded. There is no central registry for drug-dependent cases in treatment in Canada. However, since there is information on people treated in hospitals and in methadone programs, a general idea about trends can be obtained.

The numbers of drug-dependent people treated in Canadian hospitals for 1973-77 are shown in table A-6 in the Appendix. There were 2,028 treated in 1977, which is about a 25% decline since 1973, when 2,517 were treated. A decline occurred in all provinces with a traditionally high level of drug dependence (Ontario, B.C., Alberta, Manitoba). There was an increase in Quebec and Newfoundland but essentially stability in the other Maritime provinces (where admissions are few). When worked out on a population basis, the decline is even more striking. Hospital rates for drug-dependence in Ontario and B.C. fell by more than one-third (23.8 to 13.1 per 100,000 for Ontario, and 31.4 to 19.7 for B.C.). Unfortunately, separate data on the types of drug problems treated seem not to be available. Also it should be noted that the data are for hospitals and do not cover a variety of other treatment facilities such as drop-in centres, outpatient clinics not associated with a hospital, or community-based services.

Table A-7 in the Appendix shows that most admissions for both males and females were aged 20-44 years, with few in older age groups. There is a strong tendency for the population of young cases to decline: those under 20 were 28% of males and 26% of females in 1973 but only 21% and 14% by 1977.

Changes in the ratio of males to females treated are also obvious. The percentage of females has increased from 40% to 46%. By 1977 the

number of females was close to the number of males (925 compared to 1103).

First admissions to inpatient psychiatric treatment are shown in table A-8 in the Appendix. Again, there is a decline in number of cases between 1973 and 1977 (1,409 to 1,200) although not so great a decline as the hospital figures above show. The decline is substantial among younger persons (36% of males and 37% of females compared to 26% and 19%) and among males (866 in 1973 but 679 in 1977). It is also clear that the average age of cases is increasing, both among males (23 to 25) but especially among females (25 to 29).

Data are published by the Bureau of Dangerous Drugs on addicts in methadone treatment, but there is no information on their age, sex, or other characteristics (see table 17). The peak for methadone treatment was 1973, when 1,636 cases were treated. However, there was a precipitous decline by 1981 to only 668 cases (40% of those in 1973). The largest number of cases were treated in B.C., with that province accounting for about half of the national total and Ontario about a fifth in the last few years. Very small numbers receive methadone in Saskatchewan and the Maritime provinces (none in Prince Edward Island).

Data on how many persons have been treated in therapeutic communities is difficult to find. The Le Dain Commission (1973), reporting at the height of the drug crisis of the early 1970s, found 28 therapeutic communities operating in Canada. They had a maximum capacity of 634, with 379 in residence at the time of the study. A number of these therapeutic communities have closed: for example, only two of the 13 listed for Ontario were still operating in 1982. Some have taken on new tasks such as providing treatment for juvenile delinquents. Since cases in all types of treatment have declined to as little as 40% of the 1973 total, it seems reasonable that not more than about 200 addicts are now being treated in therapeutic communities. It could be as low as 154 cases, if the decline has been as great as for methadone treatment cases. The largest therapeutic communities, such as X-Kalay in Manitoba, Portage in Quebec, and Stonehenge in Ontario, are still providing treatment for addiction.

Information on just what types of drug problems are appearing for treatment is difficult to assemble. We can assume that those getting methadone have narcotics problems—but the problem could be heroin or it could be synthetic narcotics. Information on cases being seen at the emergency services of the Addiction Research Foundation shows the presenting problem for emergency service patients in the years 1976 to 1981 (table 18). These data should be cautiously interpreted, as they represent only one emergency service, and data are incomplete for some years. Nevertheless it appears that for most years, alcohol/drugs and

TABLE 17

*Persons Treated with Methadone in Canada,
by Province, 1972-1981*

	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
British Columbia	805	1,113	977	806	834	653	552	432	389	344
Alberta	187	148	65	61	65	49	42	43	58	64
Saskatchewan	72	51	38	39	22	22	17	13	20	19
Manitoba	71	59	58	47	42	36	25	20	24	27
Ontario	171	161	165	105	112	102	139	127	134	131
Quebec	167	96	43	41	29	57	17	47	55	81
Nova Scotia	33	9	4	4	0	2	0	2	1	2
New Brunswick	2	0	1	0	0	2	1	1	0	0
Newfoundland	1	1	0	0	0	0	0	0	0	0
Prince Edward Island	0	0	0	0	0	0	0	0	0	0
Total	1,509	1,636	1,351	1,103	1,104	923	793	685	681	668

Note: Surveys are made on a regular basis, usually bimonthly. The figures shown are the largest bimonthly count for the year.

Source: Bureau of Dangerous Drugs, Health and Welfare Canada.

multiple drugs are the most important problems. Since 1976 there has been an increase in problems involving LSD (1.8% to 3.5% of cases) and cannabis (1.9% to 2.4% in 1981, with 3.6% in 1980). Problems with speed and alcohol/barbiturates seem to be of diminishing importance. There is no real difference in the frequency of problems with alcohol/drugs, alcohol/barbiturates, multiple drugs, or PCP. Data for narcotics are difficult to interpret, but it seems that problems involving narcotics other than heroin are increasing substantially.

CHANGES IN TREATMENT FOR DRUG ABUSE

Many changes have occurred in the types of treatment offered for drug abuse. Some are a result of changes in the population seeking treatment, and others are applications from new research. In general the following changes seem to have taken place in treatment in the past 10 years or so:

- There are far fewer drug-dependent people coming for all types of treatment. The largest reductions seem to be in methadone maintenance and therapeutic communities.

TABLE 18

Percentages of Patients with Various Drug Problems Seen at the Addiction Research Foundation Emergency Services, 1976-1981

	1976	1977	1978	1979	1980	1981
	%	%	%	%	%	%
Alcohol & barbiturates	3.3	2.7	3.4	1.3	1.7	1.7
Alcohol & drugs	13.8	10.7	11.0	11.8	13.3	15.0
Heroin	9.7	11.8 ^a	13.4	10.1	22.5 ^a	25.3 ^a
Barbiturates	7.9	7.3	6.3	6.3	4.9	7.1
Speed	10.7	8.9	8.4	5.3	3.3	5.5
LSD	1.8	1.1	2.4	2.5	4.2	3.5
Multiple drugs	23.8	23.8	22.6	24.8	22.0	21.2
PCP	1.0	1.1	2.2	4.3	2.0	1.1
Cannabis	1.9	1.0	1.9	4.6	3.6	2.4
Other	26.1	31.6	28.4	28.9	22.5	17.2
Total number of cases	1,145	820	536	789	919	720

^a The questionnaires for the years indicated asked about "heroin and other narcotics."

Note: 1977 figures are based on 9 months; 1978 figures are based on 7 months; 1979 figures are based on 11 months; and 1981 figures are based on 11 months.

- There is some indication that the percentage of females is increasing among treated cases and that the average age for both sexes is increasing.
- There are indications that cases of heroin addiction requiring treatment are declining greatly but that cases involving other narcotic drugs are increasing. There is some indication of an increase in cases involving cannabis and LSD but a decline in those involving speed and combined alcohol/barbiturates.
- A number of therapeutic community programs have disappeared or changed their clientele to include a wider range of problems than drug use.
- There is a trend in methadone maintenance away from long-term, high-dose programs towards shorter programs aimed at withdrawal with lower levels of methadone being given.
- There are some indications that the numbers of treated people dependent upon benzodiazepine tranquillizers has been increasing.

but examination of this phenomenon is beyond the scope of this book. Readers are referred to a recent review of tranquillizer use in Canada (Cooperstock and Hill, 1982).

DOES TREATMENT FOR DRUG ABUSE WORK? STUDIES OF EFFECTIVENESS

As stated earlier, treatment is offered for many reasons—humanitarian, curative, and preventive. Treatment for drug abuse is expected to “work”—to improve the drug-dependency picture, or at least delay its worsening. Probably the expectation of complete “cure” is unrealistic. We must often be satisfied with improvement in limited areas, such as drug use, employment, family relationships, or criminality. The ideal treatment response occurs when the addict returns to a drug-free life, gains employment, stops any criminal behavior, and improves family life. Of course, this ideal eludes most addicts in treatment, who struggle with much lesser achievements or total failure. Of those drug-abuse treatments evaluated, few are very effective.

Research on treatment effectiveness is rarely done in Canada. In what there is, many of the results obtained can be called disappointing at best. The best treatment studies involve comparisons with untreated groups, so that we can say that the recovery rate was better than would have occurred with no treatment at all. A second best is to compare several kinds of treatment, so that the most effective or cheapest can be identified. We need to have reliable information on what patients were like before they had treatment and during some follow-up period after treatment has been completed—usually one or two years. Most drug-treatment evaluations done in Canada and elsewhere meet none of these criteria. They have no comparisons between untreated or treated groups, little pre-treatment information, and inadequate follow-up. The typical study is of a single facility with information only on how patients were when they left treatment. Follow-up is often limited to official records of re-admission or criminal involvement. A further problem is that almost all evaluations in Canada are of treatment for users of illicit narcotics or speed. Few have been found for treatment programs or activities for glue and solvent users, hallucinogen users, or polydrug users. Nor are there studies of programs for professional narcotics users, and very little is known about licit users.

PRISON TREATMENT AND PRISON POPULATIONS OF ADDICTS

The earliest Canadian evaluations were of prison or jail programs, and the results of those programs have mostly been poor. A program at

Matsqui prison in B.C. (Murphy, 1970) gave psychiatric and psychosocial treatment to heroin addicts. Another group received no special treatment. The follow-up indicated that the treated group did worse than a comparable untreated group in that criminality, illegal earnings, and drug use increased. It was concluded that the treatment unit helped to create a "well-adjusted, well-educated dope-fiend."

In a study in an Ontario jail, Beech and Gregersen (1964) found that addicts treated on only one occasion did far better in terms of later drug use and criminality than those treated on two occasions. As there was no control group, it is uncertain whether either did better than those who got no treatment. Lastly, a carefully controlled study by Annis (1979) was made of an extensive treatment program involving awareness and confrontation groups for incarcerated alcohol and drug offenders. An untreated control group in the same reformatory was used, pre-treatment and post-treatment measures included a battery of psychological tests, and data on prison adjustment and criminal involvement were collected. The inmates given the treatment program showed no improvement over the control group in psychological stability or adjustment. Nor did they differ on post-release employment or arrest histories, alcohol consumption levels, or use of illicit drugs. The one-year recidivism rates also showed no differences. Unfortunately, the only change was that inmates who had the therapy sessions emerged with *lower* self-esteem than they had when they went into the program. In short, this well-constructed study gives no reason for expecting treatment programs in prisons to modify drug or alcohol use.

Similarly depressing results were found by Richman and Humphrey (1969) in their study of 177 narcotic addicts imprisoned during 1954-55. They found that about one-fifth of these addicts were drug-abstinent within the five-to-eight-year period after imprisonment. However, abstinence was much less common among those who entered treatment (5%-8% abstinent) than among those who did not (34% abstinent). Treatment involved both out-patient and residential facilities with withdrawal, rehabilitation, and after-care, but apparently no use of maintenance drugs. Reasons why treatment was so unhelpful are not given by Richman and Humphrey. However, these results are not markedly different than those found in a number of other treatment programs involving incarcerated addicts.

EFFECTIVENESS OF METHADONE TREATMENT

It was not until methadone treatment developed that rates of improvement for addicts became at all respectable. Nearly all methadone studies show higher rates of improvement than do studies of prison programs or therapeutic communities. However, there is still no study

which shows that patients getting methadone treatment have higher recovery rates than might have been achieved without it.

Two studies have been made in British Columbia, where methadone was first tried with Canadian addicts. Paulus (1968) reported on a comparison of short (12 days) and "prolonged" (time not stated) methadone withdrawal. Unfortunately, the two groups of patients were not matched, the "prolonged" group being much older. The "prolongeds" had somewhat better rates of overall improvement (47% compared to 41%) and improvements in drug use and employment. However, much of this difference is probably related to their age; narcotic addicts seem to "mature out" of addiction with age, and several studies show that older addicts do better in treatment.

Williams *et al.* (1970) reported a study of high-dose and low-dose methadone involving addicts at the Narcotics Addiction Foundation of British Columbia. The low-dose group got about 40 mg of methadone per day, while the high-dose group got 100 mg. The improvement rates in the two groups were very similar, but those on high doses seemed to do slightly better in terms of employment and lessened criminal involvement. Over 60% of the patients were employed during treatment, and about the same proportion reduced their criminal involvement. However, this study had no consistent follow-up period after treatment began and no data on untreated patients.

A study of 70 narcotic addicts treated with methadone in Edmonton was reported by Anderson and Nutter (1975). They found that criminal involvement did not decrease after treatment, nor did it relate to the amount of treatment received. However, use of heroin and illicit methadone decreased. There was no increase in social stability or employment, but clients generally increased their socializing with non-users. Treatment staff could hardly fail to be disappointed with these rather limited improvements; however, there were no areas in which clients actually got worse.

Narcotic addicts treated with high-dose methadone were studied by Smart *et al.* (1977) in a four-year follow-up. Addicts received 80 to 180 mg of methadone per day plus supportive services, such as individual and group psychotherapy. At follow-up, 11.8% of addicts were non-users; 26.5% were in a treatment program; 18.6% were still addicted; 12.7% were in jail; 14.7% had died (many of drug-related causes); and the status of 15.7% was unknown. It could be said that 40.0% were "failures" or unimproved (jail, dead, or addicted) and 38.3% were "successes" (non-users or still in a program). The best outcomes were found among addicts who were older (over 35), employed at intake, working full-time, and not unemployed in the year before intake.

It is difficult to say if more addicts in the Toronto study were "successes" than if there had been no program at all. There were more successes after four years than after one year (Krakowski and Smart, 1972). Also there were more successes than Duvall *et al.* (1963) found five years after an incarceration program at Lexington hospital (only 25% abstinent) or Vaillant (1966) found after 12 years (only 15% not addicted). Without doubt the success rate for methadone has not been remarkable, and it leaves much room for better treatments to be developed.

EFFECTIVENESS OF THERAPEUTIC COMMUNITIES

Evidence about the effectiveness of most Canadian therapeutic communities for narcotic addicts seems to be lacking. Such communities usually have had untrained staff and an anti-establishment orientation. Part of this orientation includes an abhorrence of "evaluation" or even record-keeping.

One therapeutic community, "414" for speed users, was evaluated, probably because it was established as an experimental program by an agency whose main concern is research. The evaluation by Brook and Whitehead (1980) compared residents who stayed long periods at "414" with those who spent only a few hours or days. They found after an extensive follow-up that length of residence had no effect on drug use, criminality, or psychological or behavioral functioning. In short, the program seems not to have been a success, except as a research project.

A small follow-up study of Stonehenge residents has been reported (Holt, 1979); however, only 18 cases were involved out of a sample of 50. Those who participated in the follow-up seem to have made good adjustment in terms of employment and reducing their drug use and crime. However, it is highly likely that those with poorer records of recovery were also less willing to participate in the follow-up.

A COMMUNITY COUNSELOR TREATMENT PROGRAM

A novel treatment program for polydrug users has been evaluated in Alberta. McAmmond and Skirrow (n.d.) described a program involving intensive counseling for young drug users, planned so as to prevent the development of more serious dependency problems. Counselors spent a minimum of five hours a day with polydrug-using clients for the first two weeks, with informal discussions and group therapy over an additional two weeks. Of 56 entering the program, 44 completed it. It was

found that as a result of the program the use of “legal” drugs decreased greatly, but not of illegal drugs. However, the clients did decrease the number of their “encounters with the law” and made several lifestyle changes. In general, results were best with young clients of higher socioeconomic background and from families where parents were leading a happy and stable life. There was no untreated control group in this study, as is usually the case in treatment studies; hence some of the improvements may not be attributable solely to the treatment. Although the counselor program had some successes, it actually seems to have taught clients how to maintain their illicit drug use with fewer legal problems and a more comfortable lifestyle—that is, it produced happier and better-adjusted drug abusers.

CANADIAN ADDICTS TREATED IN BRITAIN: HOW WELL DID THEY DO?

For many years it was fashionable for Canadian heroin addicts to go to Britain for treatment. In part they went because Britain was thought to have “solved the narcotic addiction problem” by providing heroin maintenance on prescription through clinics and private physicians. In part they went because compulsory treatment for addicts was being considered here, and indeed such a provision was included in the 1961 Narcotic Control Act but never put into force (see chapter 8 on national laws). It was originally thought that these Canadian addicts started the heroin epidemic of the 1960s in Britain, but that view is no longer accepted (Spear and Glatt, 1971).

A total of 91 Canadian heroin addicts went to Britain in the years before 1960 (Spear and Glatt, 1971). Of those, 30 left voluntarily, 10 were deported, and 10 died (chiefly from drug overdoses); so 50 at least had a poor adjustment. Some complained that they missed getting a “high” from British clinic heroin. Since it must have been stronger than Canadian street heroin, we can only surmise that they missed the thrill of the chase for heroin and various other aspects of street life in Canada. Many returned to Canada because they missed the excitement.

Two follow-up studies indicated that those who stayed did well. Zacune (1971) interviewed 25 Canadian addicts. They were older than the average British addict. Virtually all had criminal convictions in Canada, and very few had worked. However, in Britain about three-quarters worked, and only half had criminal convictions in Britain. Gardner and Connell (1971) also found that their 15 Canadians maintained on clinic heroin all worked—in contrast to British addicts, who were often unemployed.

The experience of Canadian addicts in Britain is a tale with a com-

plicated moral. Too few stayed for anyone to prove that heroin maintenance was the main factor in their improvement. It could be that the most stable and best-motivated cases stayed in Britain. Perhaps the moral is that heroin maintenance works for some addicts and not others, and we are not sure who they are.

It should be remembered that many of the Canadians went to Britain before methadone was generally available in Canada. If it had been, many might not have left Canada, and those who did may not have had a higher success rate than those who went into methadone programs at home.

WHAT IS NEEDED IN TERMS OF TREATMENT FOR DRUG ABUSE?

Research on treatment evaluation has been both narrowly focused and pursued without the best designs for drawing conclusions. There is little evaluation of curative treatments for any groups except narcotics and speed users. The benefits of therapeutic communities are essentially unproven and unevaluated, as are most forms of hospital treatment. The job of finding effective treatments for drug abuse is not completed; yet new research on the topic seems to be largely lacking in Canada. The burst of methadone evaluation studies of the 1970s has not been replaced with any long-term research effort.

In the wake of the apparent reduction in the numbers of new drug-abuse cases and the large drop in cases seeking treatment, the national motivation to spend money on developing new treatments appears to have weakened. Nevertheless, there are a number of treatment areas which have not been explored in Canada. Chief among these would be heroin maintenance, civil commitment and other compulsory programs, and self-help programs. New pharmacological treatments, such as combinations involving narcotic antagonists and long-acting methadone, could also be tried.

A few years ago there was a high level of interest in the adoption of a British-style heroin maintenance system for Canadian narcotic addicts (Le Dain, 1973; Smart, 1974a, c). Reviews done at the time indicated that heroin maintenance had many problems. It did not attract all or most street addicts. Many who went on the heroin program continued both illicit drug use and criminality, and their recovery rates were relatively low. It was argued that heroin maintenance would probably not be much more successful than methadone maintenance. Since those reviews, an experimental study has been made of heroin and methadone maintenance in a British narcotic clinic (Hartnoll *et al.*, 1980). Patients were randomly assigned to either form of treatment. From the large

amount of pre-treatment and post-treatment data assembled, the results obtained are complex, but there was no clear advantage for heroin found in the follow-up data. It seems unlikely that heroin maintenance would drastically improve the treatment now offered to Canadian addicts; however, a controlled trial could still be of some limited interest.

Compulsory or "civil commitment" to treatment is another approach not tried in Canada yet. Compulsory treatment for narcotic addiction exists in Hong Kong, Malaysia, Singapore, and to some extent the United States in a "civil commitment" program under the federal Narcotic Addict Rehabilitation Act (NARA) of 1966. Under this act a person known to abuse narcotics can be sent, even if not charged with another offense, to observation for 30 days, and a hospital stay of six months, followed by 36 months of out-patient care. In practice, addicts committed under NARA are usually charged with a serious offense, and many agree to enter treatment as part of plea bargaining which allows them to avoid long prison terms. An evaluation by McGlothlin *et al.* (1977) has shown that the program has some successes but a high relapse rate. A similar program was proposed in British Columbia (see chapter 8); it has provoked a number of civil-liberties challenges and seems to lack both popular and political support.

Self-help programs for addicts represent another treatment avenue which is poorly developed in Canada. Although many Alcoholics Anonymous groups have been formed in Canada, there are few Narcotics Anonymous groups except in British Columbia. Flint (1964) has described a group for women established in the 1950s in Toronto. It seems to have had some limited success but a short lifespan. Such groups are sometimes established in connection with treatment programs in the United States (Nurco and Makotsky, 1981) and seem to be very helpful to at least some addicts. The Narcotics Anonymous groups can have contacts with local, regional, and international networks which can provide advice about structure, organization, and training. Currently, their philosophy is modeled on that of Alcoholics Anonymous, and much of the structure of the groups seems to be as well (Nurco and Makotsky, 1981). Just why they have not been important in Canada is uncertain. At least one major city which does not have them (e.g., Montreal) could use them, and it may take only some impetus from traditional treatment agencies to start them. Certainly their low cost and staffing needs should make them attractive to governments chronically short of funds for new treatment programs.

A last area of development could be pharmacological. Numerous new drugs are being used in experimental clinical trials with addicts (for reviews see Henry, 1974; Platt and Labate, 1976). Among these are long-acting methadone with effects lasting 72 hours; it could be given two or three times a week instead of once or twice a day as is required with

regular methadone. There are also newer opiate blockers (antagonists), such as naloxone or cyclazocine, which when in the body will completely negate the effects of equivalent doses of opiate drugs. Naloxone is expensive and difficult to give in large doses; moreover, it is ineffective unless injected. Cyclazocine has a low acceptability because it creates sleepiness, dizziness, headaches, and nausea. Currently much pharmacological work is being done to provide both new maintenance and blocking agents useful in treatment. However, all seem to have problems at present.

SUMMARY

Treatment of drug abuse is offered for humanitarian and for preventive reasons. Drug abusers require a large number of symptomatic and curative treatments. Treatment facilities in Canada include hospital-based programs, methadone maintenance (typically outpatient), and therapeutic communities. There have been declines in numbers of drug abusers being treated in all types of facilities (although accurate data for therapeutic communities are difficult to find). Unfortunately, effective treatments of a curative nature do not seem to be available. Evaluations of prison and therapeutic-community programs are disappointing. However, those for methadone treatment are more encouraging. Further research on treatment is needed: for example, on self-help groups, on compulsory treatment, and on the range of new pharmacological agents.

SECTION IV

Summary and Conclusions

The Future for Illicit Drug Use and Its Prevention

Summarizing the total Canadian experience in dealing with illicit drugs is not an easy task. There are many threads in a complex garment. Some involve the efforts to understand drug use through collecting data on convictions, “known users,” or treatment admissions, or through establishing special studies and government commissions. Others involve “law and order”—or more legislation—the favorite Canadian solution to most social problems. Still others involve treatment for drug abusers, programs to provide education or persuasion, and even programs for parents to take matters into their own hands. All in all, Canada has seen a vast, if uncoordinated, effort to understand and control drug abuse. A large amount of information exists on what the problems are, where they are located, and who has them. Unfortunately we are often not sure “what works” in terms of how to prevent them. In this chapter we attempt the major aspects of the illicit drug problem in Canada and draw some conclusions about the future and its needs for both preventive and research effort.

SOME HISTORICAL HOME TRUTHS

Illicit drug use in Canada has had a long life but a short history. It is clear that use of psychotropic drugs was not known to indigenous peoples but brought by European settlers, chiefly via their patent medicines. While much of the early history is sketchy, what is known makes for interesting reading. Though early patent and proprietary medicines often contained addictive drugs, laws controlling them were a long time coming. When they came, it was as much in response to temperance sentiments as the desire to regulate harmful substances. Moreover, the penalties were often excessive and were applied most strictly to Chinese users of opium in British Columbia, although at that time there was little knowledge about the ill effects of opium smoking. One indirect effect of its suppression was the development of a market for heroin. During the 1920s and 1930s, the strict law-and-order approach became

the accepted ideology for dealing with drug abuse. This ideology met no serious challenges until the 1960s and 1970s.

Another historical curiosity is the lack of medical and scientific interest in drug abuse. For several generations, all important concepts, initiatives, and even data about the problem originated with law enforcement sources. The medical and other professions took virtually no role in the treatment or study of drug abuse before the 1960s and little until the 1970s. For example, there was no Canadian effort to provide maintenance treatment for addicts in the 1920s as there was in Britain and the United States. Fortunately, attitudes have changed, and a variety of professions and sciences study and provide treatment for drug abuse.

CHANGES IN DRUG ABUSE IN CANADA

The drug-abuse problem has been constantly changing. The problem consisted of opium smoking and unregulated patent medicines in the early 1900s. After that there was a marked lack of problems through the 1930s and 1940s, until the postwar era saw increased heroin abuse. The only substantial drug epidemic in terms of numbers of users and variety of drugs occurred in the early to mid-1970s. Whereas earlier widespread drug use was confined largely to British Columbia, this epidemic was nationwide. It resulted in the spread of drugs such as cannabis, speed, and hallucinogens into every province and city and even to most smaller centres. Without this vast spread in use, it is likely that few Canadians outside British Columbia would have had more than a passing concern about drugs; nor would they have encountered drug use in their own families. On the other hand, most of the programs of research, treatment, and education would never have developed beyond a few treatment centres for narcotic addiction. The unwanted legacy of the 1970s is, of course, a high level of cannabis use in the population and a generation raised to see recreational use of illicit drugs, especially of cannabis, as a normal part of life. On the positive side, some Canadian agencies for treatment, research, and education are among the best in the world. We are now much better able to understand and cope with drug abuse than ever in the past.

WHAT DO WE KNOW ABOUT DRUG ABUSE IN CANADA?

While numerous studies have been reviewed of the characteristics of illicit drug users and abusers in Canada, it is not proposed to summarize them all here. What stands out? Canadian illicit drug users seem

to be middle-class urban, predominantly male, and young; their use is eclectic in nature and largely experimental.

The bourgeois or middle-class nature of abuse in Canada is exceptional. Canadian users of all types of drugs seem to be predominantly middle-class or upper-middle-class. There is little evidence that in Canada it is the dispossessed racial or economic minorities who turn to drugs as a solution, in contrast to what is frequently seen in the United States. (The exception may be certain Indian reservations with respect to use of inhalants, but the reporting may be biased.) Cannabis users, speed and LSD users, and even heroin addicts seem to be predominantly middle-class and to mirror the characteristics of the population at large.

The predominantly male nature of illicit use, especially heavy use, is clear in almost all studies, regardless of type of drug. The over-representation of males varies somewhat from one drug to another, but it is always here. Certainly there is some recent tendency for females to catch up with regard to cannabis use. However, this tendency is not so striking with other drugs.

Most illicit use and abuse occurs among young people. In general, the more dangerous the drug, the more likely that its use is predominantly a youthful activity. Although there are many cannabis users over 40, there are few heroin or speed users. The peak age for drug use and problems seems to be 17 to 25 for all drugs other than glue and inhalants. They have an earlier peak (14 to 17) and attract virtually no adult users.

Canadian drug abusers are eclectic. Virtually all studies show that users of any particular illicit drug are more likely to be users of any other drug. Cannabis appears to be a "boundary" drug, in that almost all users of other illicit drugs used cannabis first. While not all cannabis users go on to other drugs, a substantial proportion do.

The eclectic nature of the drug choice can also be seen in the historical record. There is no one drug which has been traditionally accepted and used for any length of time. Illicit drugs in Canada fall in and out of fashion quickly, and few other than heroin last longer than a generation.

The geographic distribution of drug abuse has often been noted in this book. Regionalism exists in drug abuse as it does in Canadian politics. For generations there was little narcotic addiction outside British Columbia and much inside. Nearly all of the speed epidemic of the 1970s occurred in Ontario and Quebec. Generally, drug use of all sorts (except for cannabis) has been rare in the Maritime provinces. Much evidence indicates that most kinds of drug use and addiction (such as cannabis use, heroin addiction, or speed use) occur more commonly in

large cities than in smaller centres or rural areas. This, in part, explains the greater concentration of problems in British Columbia and Ontario, since they are the provinces in which the highest proportions of the population are city-dwellers.

Lastly, we should note that most illicit drug use in Canada is experimental in nature. Most users of illicit drugs take them infrequently and do not become dependent or addicted. Cannabis seems to attract the largest proportion of heavy users, but few become addicted.

The groups at highest risk for all types of illicit drug use in Canada are young males, those who have dropped out of school early, those who use alcohol and other drugs, those living in large cities where drugs are readily available, and those associating with other drug users.

RECENT TRENDS IN ILLICIT DRUG USE

As mentioned earlier, the peak for many kinds of illicit drug use seems to have been in the early- to mid-1970s. This was certainly true of stimulants, speed, inhalants, hallucinogens other than LSD, and heroin. Since that time there are indications from survey data, poison control centres, and treatment data that the use of all of these drugs has declined. Only three popular illicit drugs—cannabis, cocaine, and LSD—have shown a different pattern. Cannabis use continued to increase through the 1970s, but there are a few recent indications from surveys that the rates of overall use have stabilized or perhaps even decreased among adults. Cocaine use has not been studied sufficiently in many surveys, but what evidence exists from convictions data indicates large increases in overall use throughout the 1970s. The indicators for LSD are somewhat contradictory, with surveys and treatment admissions (but not always arrest data) indicating increases in use throughout the 1970s. It appears likely that the most important illicit drugs in the next 10 years will be cannabis, LSD, and cocaine, among those which we know already. Of course, the drug scene is continually changing, and new drugs can become more available or wildly popular very quickly.

NEW LEGAL CONTROLS?

It has been argued at length that Canada has rather harsh legal controls on drug use, including heavy penalties for cannabis possession and importing, the use of writs of assistance, and other means within the Narcotic Control Act. Critics of the laws should consider that their existence may have helped to control the growth of narcotic addiction, at the same time unfortunately criminalizing cannabis users. Other socio-cultural factors, such as the natural "law-abidingness" of Canadians, are

certainly as important as legal controls. At this time we seem to be on the verge of many liberalizations in drug laws. The impetus to modify the cannabis laws is well known. However, other changes may make drug laws and investigations less harsh in the implementation of the new Charter of Rights. What effect such changes will have over time is difficult to predict. However, it will be a challenge for jurists and policy-makers to introduce civil-rights considerations to drug control while not losing whatever useful deterrent effect exists.

Probably Canada has had over-dependency on legal controls as the response to drug-abuse problems. To some extent this emphasis has limited the possibilities for other policy initiatives such as treatment and education—areas which are now in need of considerable development.

THE NEED FOR TREATMENT

Every society provides both curative and symptomatic treatment for drug abusers, and Canada has provided a great deal. Much curative treatment, especially that given in jails or therapeutic communities, has been ineffective. Only methadone maintenance seems to offer much hope among the treatments currently available for narcotic addicts. Curative treatment for other kinds of drug abuse seem to be evaluated rarely. The volume of treatment being given for illicit drug abusers has decreased greatly since the mid-1970s, especially treatment with methadone or in therapeutic communities.

Of course, users of many illicit drugs do not request or require treatment except for emergency conditions. Users of cannabis, cocaine, and most hallucinogens would be in this category. Since these drugs are all commonly used and show either an upward or a stable trend in use, the need for treatment will probably not increase much over the next few years. Most treatment seems to have been provided in the past to narcotic addicts and to stimulant or speed users, all of whose numbers seem to be decreasing. Nevertheless, there is a need for the development of better and more effective treatments for all types of users.

EDUCATION AND PERSUASION

The available evidence on the value of education and preventive efforts is not encouraging. Many programs have no important effects, and a few have negative ones. None seem to be able actually to decrease drug use. However, the field is relatively new, and many of the programs have been ineptly designed or inadequately presented. There is a need for more sophisticated school and mass-media programs for primary prevention. In addition, drug-abuse control could benefit from associa-

tion with social movements such as the fitness boom or the interest in healthy foods and nutrition.

RESEARCH NEEDS

The amount of research which could be done, given the resources, is always unlimited. However, the most important needs are usually fewer, and the needs of this field are no exception. The main needs identified in this review include the following:

- A better understanding of some of the historical trends in illicit drug use—for example, the reasons for the near disappearance of opium use in the 1920s and 1930s and for the drug epidemic of the 1970s.
- Some national monitoring instruments which would tell about trends in illicit drug abuse at an early stage, before convictions and hospital admissions appear at levels which are unacceptably high.
- Some understanding of both the deterrent and the criminalizing effects of drug control laws (including police practices). Resulting cost-benefit analyses could allow a decision about whether given laws are acceptable and worth their costs both in economic and human terms.
- More knowledge of what types of curative treatment are effective overall and for different types of drugs abusers. The need to adjust treatment to patient characteristics is often recognized but rarely possible in practice.
- More investigation of how to prevent the first use of illicit drugs—that is, primary prevention by means of education or persuasion. Much of the need is for the development and testing of effective drug education programs for schools.

Appendix

- A-1 First Admissions of Drug Addicts to Mental Institutions, 1948–1964
- A-2 Availability of Psychoactive Drugs in 23 Countries
- A-3 Maximum Penalties for Possession, Trafficking, and Importing Narcotics in 17 Countries
- A-4 International Drug Treaties and When They Were Ratified
- A-5 Economic and Social Indicators: Comparison of Canada and the United States
- A-6 Hospital Separations for Drug Dependence Cases, by Province and Sex, 1973–1977
- A-7 Hospital Separations for Drug Dependence Cases, by Age and Sex, 1973–1977
- A-8 First Admissions of Inpatient Psychiatric Institutions for Drug Dependence, by Age and Sex, 1973–1977

TABLE A-1

*First Admissions of Drug Addicts to
Mental Institutions, 1948-1964*

Year	Male	Female	Total	Year	Male	Female	Total
1938	16	15	31	1953	25	20	45
1939	16	24	40	1954	35	27	62
1940	8	23	31	1955	36	33	69
1941	10	20	30	1956	69	56	125
1942	9	18	27	1957	69	73	142
1943	9	14	23	1958	56	68	124
1944	20	9	29	1959	67	98	165
1945	17	17	34	1960	77	88	165
1946	16	11	27	1961	64	101	165
1947	20	9	29	1962	63	81	144
1948	0	5	5	1963	61	68	129
1949	19	15	34	1964	73	85	158
1950	9	17	26				

Note: In 1965 the reporting system changed so radically as to make later figures not comparable to earlier figures.

Average age of admissions in the 1940s was 42. Almost all were urban; most occurred in Ontario and Quebec and not British Columbia.

Source: Dominion Bureau of Statistics.

TABLE A-2

*Availability of Psychoactive Drugs
in 23 Countries*

Country	Plants cultivated	Original manufacture	Re-packaging	Prescription system
Argentina	Various hallucinogenic plants including piptadina & datura	Yes	Yes	Yes
Australia	Cannabis, opium poppy	Yes	—	Yes
Bangladesh	Cannabis	No	Yes	Yes
Canada	Cannabis	No	Yes	Yes
Finland	None	Yes	—	Yes
France	Opium poppy	Yes	Yes	Yes
Hong Kong	—	—	—	Yes
India	Opium poppy, cannabis, ganja	Yes	—	Yes
Indonesia	Cannabis	No	Yes	Yes
Ireland	None	No	Yes	Yes
Japan	Many, including opium poppy	Yes	Yes	Yes
Kenya	Cannabis, khat	No	No	Yes
Malaysia	—	Yes	Yes	Yes
Mauritius	Cannabis	No	Yes	Yes
Mexico	Opium poppy, cannabis, peyote	Yes	Yes	Yes
Nigeria	Cannabis, kwaya	No	Yes	Yes
Pakistan	Opium poppy, cannabis	No	No	No
Peru	Coca, cannabis, opium poppy, datura, banisteria	No	Yes	Yes
Philippines	Cannabis	Yes	—	Yes
Poland	Opium poppy	Yes	—	Yes
Singapore	None	No	No	Yes
Togo	Cannabis	No	No	Yes
United Kingdom	None	Yes	Yes	Yes

TABLE A-3

*Maximum Penalties for Possession, Trafficking,
and Importing Narcotics in 17 Countries*

Country	Possession	Trafficking	Importing
Argentina	12 years	12 years	12 years
Australia	2 years	25 years	25 years
Canada	7 years	life	life
Finland	2 years	10 years	10 years
France	10 years	10 years	10 years
Hong Kong	3 years	life	life
India	4 years	4 years	4 years
Indonesia	3 years	life	life
Japan	10 years	10 years	life
	maximum	maximum	
Mauritius	5 years	5 years	5 years
Nigeria	6 months	death	death
	minimum		
Pakistan	5 years	14 years	—
Peru	—	25 years	—
Philippines	12 years	death	death
Poland	1 year	5 years	5 years
Singapore	10 years	death	death
Togo	2 years	2 years	2 years

TABLE A-4

*International Drug Treaties and
When They Were Ratified*

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1. Convention for the International Opium Convention. Signed at The Hague, January 23, 1912. Not ratified by Canada but by Britain December 17, 1912.
 2. Convention for the International Opium Convention. Signed at Geneva, February 19, 1925, and ratified by Canada June 27, 1928.
 3. Convention for Limiting the Manufacture and Regulating the Distribution of Narcotic Drugs. Signed at Geneva, July 13, 1931 and ratified by Canada October 17, 1932.
 4. Convention for the Suppression of the Illicit Traffic in Dangerous Drugs. Signed at Geneva, June 26, 1936, and ratified by Canada June 27, 1938.
 5. Protocol Amending the Agreements, Conventions and Protocols on Narcotic Drugs. Signed at Lake Success, December 11, 1946, and ratified by Canada December 11, 1946.
 6. Protocol Bringing under International Control Drugs outside the Convention of July 13, 1931. Signed at Paris, November 19, 1948, and ratified by Canada November 19, 1948.
 7. Protocol for Limiting and Regulating the Cultivation of the Poppy Plant, the Production of, International and Wholesale Trade in, and use of Opium. Opened for signatures at New York, June 23, 1953, and ratified by Canada May 7, 1954.
 8. Single Convention on Narcotic Drugs, 1961. Opened for signature March 30, 1961, and ratified by Canada October 11, 1961.
 9. Convention on Psychotropic Substances of 1971. Open for signature February 21, 1971, and not ratified by Canada.
 10. Protocol Amending the Single Convention on Narcotic Drugs, 1961. Open for signature, March 25, 1972, and ratified by Canada August 5, 1976.
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TABLE A-5

*Economic and Social Indicators:
Comparison of Canada and the United States*

Indicator	Canada	U.S.A.
GNP per capita (U.S. dollars): 1978 ¹	9,180	9,590
Average annual rate of inflation (%): 1970-1978 ¹	9.4	6.8
Share of household income (%): 1969 for Canada, 1972 for U.S.A. ¹		
— by poorest 20% of households	5.0	4.5
— by richest 20% of households	41.0	42.8
Ratio of total labor force to population 15-64 years: 1973 ²	66.5	68.3
Enrollment in secondary school (% of secondary-school-age population): 1977 ¹	91.0	93.0
Infant death rate per 1,000 live births: 1973 ²	15.5	17.6
Death rate per 100,000 population: 1974 ²	746.7	912.2
Major cause of death (as % of total number of deaths): 1973 ²		
— major cardiovascular disease	48.9	52.6
— malignant neoplasms	20.1	17.8
Hospital occupancy rates (estimated % occupancy in short-term public, general and allied special hospitals): 1972 ²	78.7	78.0
Public mental hospital resident patient rate per 100,000 population: 1972 ²	115.4	132.1
Population per physician: 1972 ²	637.0	562.0
Personal expenditure per capita on medical and health care services (constant 1964 U.S. dollars): 1973 ²	61.4	208.0

Sources:

1. World Bank, *World Development Report 1980* (New York: Oxford University Press, 1980).
2. Michalos, A.C., *North American Social Report: A Comparative Study of the Quality of Life in Canada and the U.S.A. from 1964 to 1974*. Volume I: *Foundations, Populations, and Health*. (Dordrecht: D. Reidel, 1980).

TABLE A-6

*Hospital Separations for Drug Dependence Cases,
by Province and Sex, 1973-1977*

Province	Male %					Female %					Total number				
	1973	1974	1975	1976	1977	1973	1974	1975	1976	1977	1973	1974	1975	1976	1977
Nfld.	69	29	29	24	58	31	71	71	76	42	13	7	7	25	31
P.E.I.	25	25	86	89	89	75	75	14	11	11	4	4	7	9	9
N.S.	69	56	44	44	58	31	44	56	56	42	13	18	9	16	12
N.B.	58	83	77	77	60	42	17	23	23	40	12	6	13	13	15
Que.	55	53	54	56	53	45	47	46	44	47	392	437	489	481	537
Ont.	64	64	63	63	63	36	36	37	37	37	1,194	1,049	890	610	752
Man.	49	47	51	43	33	51	53	49	57	67	111	78	75	86	75
Sask.	55	47	52	58	40	45	53	48	42	60	129	107	83	80	92
Alta.	48	40	40	49	45	52	60	60	51	55	185	196	168	220	177
B.C.	64	55	52	50	49	36	45	48	50	51	464	490	392	311	328
Total	60	57	56	56	54	40	43	44	44	46	2,517	2,392	2,124	1,851	2,028

Note: The figures reported above relate to "cases separated" during the year and not to the actual number of "persons" involved, as an individual is counted on each separate occasion that she or he stays in the hospital.

Source: *Hospital Morbidity 1973, 1974, 1975, 1976, and 1977*, Statistics Canada, Cat. 82-206, 1976, 1977, 1978, 1979, and 1980 respectively.

TABLE A-7

*Hospital Separations for Drug Dependence Cases,
by Age and Sex, 1973-1977*

Age	1973		1974		1975		1976		1977	
	Male %	Female %	Male %	Female %	Male %	Female %	Male %	Female %	Male %	Female %
Under 20	28	26	25	25	25	20	19	14	21	14
20-24	31	20	29	17	25	18	25	18	23	18
25-34	20	20	21	22	25	22	27	24	28	24
35-44	10	13	12	16	12	18	12	19	11	17
45-64	9	17	10	16	11	18	14	20	14	20
65 and over	2	3	2	3	2	4	3	5	3	6

Total number	1,511	1,006	1,356	1,036	1,193	931	1,030	821	1,103	925
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Note: The figures reported above relate to "cases separated" during the year and not to the actual number of "persons" involved, as an individual is counted on each separate occasion that she or he stays in hospital.

Column totals will not necessarily add up to 100 %, because of rounding.

Source: *Hospital Morbidity* 1973, 1974, 1975, 1976, and 1977, Statistics Canada, Cat. 81-106, 1976, 1977, 1978, 1979, and 1980 respectively.

TABLE A-8

*First Admissions to Inpatient Psychiatric Institutions
for Drug Dependence, by Age and Sex, 1973-1977*

Age	1973		1974		1975		1976		1977	
	Male %	Female %	Male %	Female %	Male %	Female %	Male %	Female %	Male %	Female %
Under 20	36	37	36	29	31	24	29	20	26	19
20-29	47	30	48	36	46	35	45	37	48	36
30-39	9	14	9	13	11	20	13	20	12	21
40-49	5	10	4	14	5	14	8	15	8	13
50-59	2	6	2	5	4	5	4	4	3	7
60 and over	2	3	1	3	3	3	2	4	2	4
Total number	866	543	751	453	782	527	664	598	679	521
Median age	23	24	23	26	24	28	25	28	25	29

Note: These are not unduplicated counts of individuals, as some provincial hospital systems include, as first admissions, individuals who have received care in psychiatric inpatient facilities outside their system.

Column totals will not necessarily add up to 100%, because of rounding.

Source: *Mental Health Statistics—Volume I—Institutional Admissions and Separations 1973, 1974, 1975, 1976, and 1977*, Statistics Canada, Cat. 83-204, 1976, 1977, 1978, 1979, and 1980 respectively.

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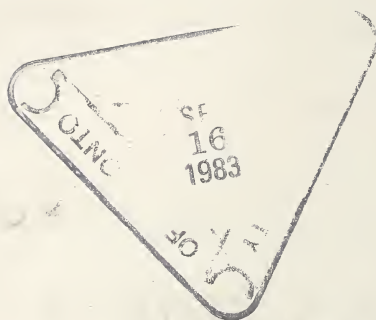
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REGINALD G. SMART

Dr. Smart is Director of the Program Development Research Department of the Addiction Research Foundation. He is the author of numerous research and social policy studies on the extent of drug abuse and its prevention and treatment. For many years he has been involved in international research projects and he has often been a consultant to international health organizations.

This book describes the nature of illicit drug abuse and what can be done to prevent and control it. It contains material on cannabis, heroin and other opiates, stimulants, hallucinogens, cocaine and solvents. There is an extensive history of drug abuse and trends in use are analyzed.

An important part of the book is concerned with prevention and legal controls. Dr. Smart analyzes national and international laws, education programs and efforts at treatment. In addition, he examines the role of parents and socio-cultural factors in the prevention of drug problems. The concluding section describes how drug abuse will affect society in the near future.



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